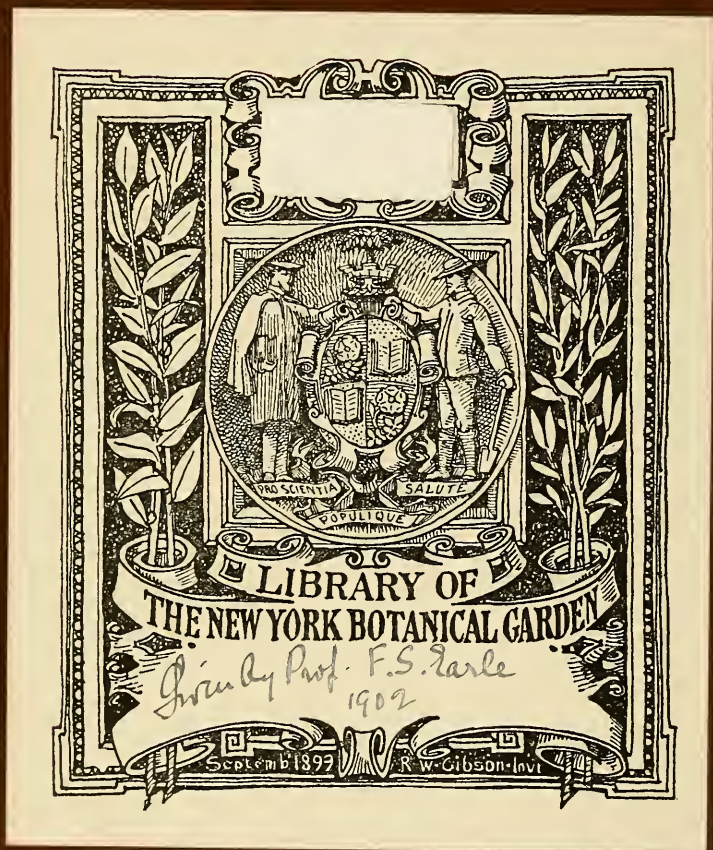
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TRANSACTIONS

OF THE

Illinois State Horticultural Society

FOR THE YEAR 1889,

BEING THE

Proceedings of the Thirty-Fourth Annual Meeting

HELD AT

Hamilton, December 10, 11, 12;

ALSO PROCEEDINGS OF THE

ALTON-SOUTHERN, CENTRAL AND NORTHERN DISTRICT SOCIETIES,

ALSO

PIKE COUNTY, MARSHALL COUNTY, RICHLAND COUNTY, KANKAKEE AND WARSAW SOCIETIES; ALSO FRUIT GROWERS' ASSOCIATION OF SOUTHEASTERN ILLINOIS.

FOR THE YEAR 1889.

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NEW SERIES—VOL. XXIII.

EDITED BY THE SECRETARY, A. C. HAMMOND, WARSAW, ILL.

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REPORT TO THE GOVERNOR.

To His Excellency, Hon. JOSEPH W. FIFER, Governor of Illinois:

In compliance with legal requisition, I herewith hand you the Twenty-third Volume of Transactions of the Illinois State Horticultural Society. We sincerely hope that a careful examination of its contents will convince you that we have, during the year, made a marked advance.

The last Legislature (very wisely as we think) granted us an increased appropriation, $1,000 of which was to be expended in horticultural experiments. Although the bill was not passed till the middle of May, the work, as will be seen by the report herewith published, is well begun, and if properly prosecuted, will be worth millions of dollars to the farmers of Illinois.

We have also doubled the number of copies of Transactions heretofore published, and these books will go into the hands of men who will appreciate and profit by them, and we are confident, that the good accomplished will many times pay the cost of publication.

Very respectfully yours,

A. C. HAMMOND, Secretary.

WARSAW, Jan. 24, 1890.

JAN 13 1902

OFFICERS FOR 1890.

President—JABEZ WEBSTER, Centralia.
Vice-President—H. L. DOAN, Jacksonville.
Secretary—A. C. HAMMOND, Warsaw.
Treasurer—H. K. VICKROY, Normal.

EXECUTIVE BOARD.

JABEZ WEBSTER,.....President State Society.
A. C. HAMMOND,.....Secretary State Society.
ARTHUR BRYANT,.....President Northern Society
A. DUNNING,.....Vice-President Northern Society.
F. I. MANN,.....President Central Society.
H. L. DOAN,.....Vice-President Central Society.
E. A. RIEHL,.....President Southern Society.
WM. JACKSON,.....Vice-President Southern Society.

AD-INTERIM COMMITTEES.

THE President and Secretary of the State Society and Presidents and Vice-Presidents of the District Societies were instructed to perform this work themselves, or place it in the hands of other competent persons, as the interests of the Society may demand.

ANNUAL MEETING.

THE Annual Meeting for 1890 will be held in Cairo, December 9th, 10th and 11th, 1890.

STANDING COMMITTEES.

Orchards—L. R. Bryant, Princeton; A. M. Anderson, Centralia; J. R. Williams, Barry.

Raspberries and Blackberries—H. L. Doan, Jacksonville.

Grapes—J. S. Browne, Alton; A. H. Worthen, Warsaw; Paul Bonvelt, St. Ann.

Farmer's Kitchen Garden—A. L. Hay, Jacksonville.

Strawberries—Leon Hay, Kankakee; W. S. Dyer, Springfield; C. H. Webster, Centralia.

Stone Fruits—G. W. Endicott, Villa Ridge; Benj. Buckman, Farmingdale; J. V. Cotta, Nursery.

Best Evergreens for General Planting—George C. Hanford, Makanda.

Flowers of Easy Culture—G. W. E. Cook, Lacon.

Nut Bearing Trees—J. M. Pearson, Godfrey.

Influence of Root on Tree as Regards Health and Hardiness—Prof. T. J. Burrill, Champaign.

Pear Culture—George Gould, Villa Ridge.

Spare the Snakes—F. I. Mann, Gilman.

The Horticultural Outlook—H. M. Dunlap, Savoy; E. T. Hollister, St. Louis.

The Family Orchard and Varieties—Arthur Bryant, Princeton; J. T. Johnson, Warsaw; Capt. E. Hollister, Alton.

Entomology—Prof. S. A. Forbes, Champaign.

YOUNG PEOPLE'S SESSION.

Influence of Horticulture, Mental and Moral—M. S. Hammond, Warsaw.

The Children's Garden—E. H. Riehl, Alton.

The President and Secretary were authorized to add to this list a number of Young People who are willing to take part in the exercises of this Session. They will therefore be glad to correspond, with this end in view, with several young ladies and gentlemen who are interested in rural affairs.

CONSTITUTION AND BY-LAWS.

AS AMENDED AT THE ANNUAL MEETING, 1874.

CONSTITUTION.

I. This Association shall be known as the ILLINOIS STATE HORTICULTURAL SOCIETY.

II. Its object shall be the advancement of the Science of Pomology and the Art of Horticulture.

III. Its Members shall consist of Annual members, paying an annual fee of one dollar; of Life members, paying a fee of twenty dollars at one time; and of Honorary members, who shall only be persons of distinguished merit in Horticulture or kindred sciences, who may, by vote, be invited to participate in the privileges of the Society. The wives of members shall be members without fee.

IV. Its officers shall consist of a President, one Vice-President, Secretary, and Treasurer, who shall be elected at the annual meeting, and serve until their successors are chosen; also an Executive Board as hereinafter provided.

V. The affairs of the Society shall be managed by an Executive Board to consist of the President and Secretary of the Society, and President and Vice-President from each of the three District Horticultural Societies of the State.

VI. The Society shall hold annual meetings, and publish its transactions annually; *provided*, there are sufficient funds in the treasury to defray the expenses of publication.

VII. The Constitution may be amended at any regular meeting by a two-thirds vote of the members present.

BY-LAWS.

I. The President shall preside at all meetings of the Society, call the meetings of the Executive Board, and, under its direction, have a general superintendence of the affairs of the Society; and direction of expenditure of money; he shall deliver an annual address upon some subject connected with Horticulture, and shall appoint all special committees unless otherwise ordered.

II. The Vice-President shall preside at the meetings in the absence of the President.

III. The Secretary shall, upon the direction of the Executive Board, conduct the correspondence of the Society, have charge of its books, papers, and reports, and prepare its reports for publication: and shall receive for his necessary expenses for postage, stationary, printing, expressage, office rent and salary, such sums as the Executive Board may vote therefor.

IV. The Treasurer shall receive and keep an accurate account of all moneys belonging to the Society, and disburse the same upon the written orders of the President, which he shall retain and file as vouchers; he shall make an annual report to the Society of the receipts and disbursements, which, with the vouchers, shall be referred to a special auditing committee appointed at the annual meeting. Before entering upon his duties he shall give bond to the Society in the sum of five thousand dollars for the faithful performance of his duties; such bond to be approved by the Executive Board.

V. The Executive Board shall perform all the duties required of them by Section 4, of the "Act reorganizing the State Horticultural Society," approved March 24, 1874. They may appoint such standing and other committees as they may deem advisable.

VI. These By-Laws may be altered at any regular meeting by a two-thirds vote of the members present.

AN ACT to reorganize the Illinois State Horticultural Society:

Be it enacted by the People of the State of Illinois, represented in the General Assembly:

SECTION 1. That the organization heretofore chartered and aided by appropriations under the name of the Illinois State Horticultural Society, is hereby made and declared a public corporation of the State.

SEC. 2. The Illinois State Horticultural Society shall embrace, as hereinafter provided, three horticultural societies, to be organized in the three horticultural districts of the State, which shall be known as the Horticultural Society of Northern Illinois, now operating in the counties of Bureau, Boone, Cook, Carroll, DuPage, DeKalb, Henry, Grundy, Jo Daviess, Kane, Kendall, Kankakee, Lake, Lee, LaSalle, McHenry, Ogle, Putnam, Rock Island, Stephenson, Whiteside, Winnebago and Will (23); the Horticultural Society of Central Illinois, operating in the counties of Adams, Brown, Cass, Champaign, Christian, Coles, DeWitt, Douglas, Edgar, Fulton, Ford, Iroquois, Hancock, Henderson, Knox, Logan, Livingston, McLean, McDonough, Marshall, Mason, Mercer, Menard, Morgan, Macon, Moultrie, Peoria, Pike, Piatt, Sangamon, Shelby, Schuyler, Scott, Tazwell, Vermilion, Warren and Woodford (38); and the Horticultural Society of Southern Illinois, operating in the counties of Alexander, Bond, Clark, Clay, Crawford, Calhoun, Cumberland, Clinton, Edwards, Effingham, Fayette, Franklin, Green, Gallatin, Hamilton, Hardin, Jasper, Jefferson, Jersey, Jackson,

Johnson, Lawrence, Madison, Macoupin, Marion, Monroe, Montgomery, Massac, Perry, Pope, Pulaski, Richland, Randolph, St. Clair, Saline, Union, Wayne, White, Washington, Williamson and Wabash (41).

SEC. 3. The affairs of the Illinois State Horticultural Society shall be managed by an Executive Board, to consist of the President and Secretary of said Society, and the President and one Vice-President from each of the three District Horticultural Societies; *provided*, that the eligible officers now elect of the Illinois State and District Horticultural Societies shall be the first members of the Executive Board created by this act, and shall hold their office until their successors are elected, as hereinafter provided..

SEC. 4. The Executive Board of the Illinois State Horticultural Society shall have the sole care and disposal of all funds that may be apportioned (appropriated) by the State of Illinois to sustain the Illinois State Horticultural Society, and shall expend the same in such manner as in their judgment will best promote the interests of Horticulture and Arboriculture in this State. They shall meet at Springfield on the second Tuesday after the first Monday in January, 1875, and biennially thereafter. They shall render to the Governor of the State a detailed statement of all funds received from the State and all other sources, which statement shall also include all expenditures made by them, and the specific objects in detail for which said sums were expended. They shall make no appropriation without having funds in hand to meet the same, and if any debt is created, the members of the Board shall be held severally and jointly liable for the payment of the same, and in no event shall the State of Illinois be held liable or responsible for any debt, obligation or contract made by the Illinois State Horticultural Society or its Executive Board.

SEC. 5. The Illinois State and the three District Horticultural Societies shall hold annual meetings, at which their officers for the ensuing year shall be elected. Within one month after the annual meeting of the District Societies they shall forward to the Secretary of the Executive Board a report of their transactions, including a list of officers elected at such meeting. The Executive Board shall publish annually, at the expense of said Society, a report of its transactions and such other papers as they may deem of value to Horticulture and Arboriculture. Four members of the Executive Board shall constitute a quorum for the transaction of business.

SEC. 6. Members of the several District Societies shall be entitled to all the privileges of the members of the State Society, except that of voting for officers.

SEC. 7. By-Laws and rules that do not conflict with the laws of this State may be passed and enforced by the several Societies herein mentioned.

Approved March 24, 1874.

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*The Society was first incorporated February 11, 1857—two months after its organization.

List of Members for 1890.

Auer, Jacob	Deer Plains.
Aldrich, Henry A	Neoga.
Beeby, J. C	Girard.
Bryant, Arthur	Princeton.
Bryant, L. R	Princeton.
Berry, R. C	Batchtown.
Brown, H. D	Hamilton.
Budlong, L. A	Chicago.
Buckman, Benj.	Farmingdale.
Burke, G. W	Elm Grove.
Baldwin, W. A	Jacksonville.
Beal, L. N	Mount Vernon.
Cogswell, C. H	Virden.
Cook, G. W. E	Lacon.
Cart, J. J	Morrisonville.
Cotta, J. V	Nursery.
Cottel, J. R	Princeton.
Christian, Jacob	Mt. Carroll.
Cadwell, F	Griggsville.
Coe, Ira.	Quincy.
Coe, Iro	Quincy.
Coquoillette, W. E	LaHarpe.
Crain, W. R	Villa Ridge.
Duchone, L	Lacon.
Dyer, W. S	Springfield.
Dennis, C. N	Hamilton.
Doan, H. L	Jacksonville.
Dunning, A	Dunning.
Dunlap, Henry M	Savoy.
Draper, A. N	Upper Alton.
Dodge, Sherman F	Hamilton.
Fry, R. T	Olney.
Freeman, H. C	Alto Pass.
Fitch, J. N	Cobden.
Farrand, J. A	Griggsville.
French G. H	Carbondale.
Freese, Joseph	Coatsburg.

Gay, C. V ..... Camp Point.
Goff, A. M ..... Rantoul.
Gaston, A. H ..... Lacon.
Green, W. H ..... Bushnell.
Gray, S. S ..... Hamilton.
Goodrich, T. E ..... Cobden.
Hay, George ..... Savanah.
Hollister, E. T ..... St. Louis, Missouri.
Hammond, A. C ..... Warsaw.
Hammond, M. S ..... Warsaw.
Heikes, W. H ..... Huntsville, Ala.
Humphrey, Dr. A. G ..... Galesburg.
Hay, A. L ..... Jacksonville.
Hambleton, B. F ..... Keokuk, Iowa.
Jackson, Wm. ..... Godfrey.
Jones, W. E ..... Lincoln.
Johnson, F. C. ..... Kishwaukee.
Johnson, J. T ..... Warsaw.
Judd, James T., (Orange Judd, Farmer) ..... Chicago.
Johnson, T. C ..... Warsaw.
Leeper, R. Byrd ..... Paducah, Kentucky.
Leeper, T. F ..... Lima.
Leroy, M ..... Hamilton.
LaMonte, W. H ..... Hamilton.
Mann, F. I ..... Gilman.
McKinney, E. R ..... Lacon.
Mathews, J. B ..... Marissa.
McCluer, G. W ..... Champaign.
Mesler, W. P ..... Cobden.
McWhorter, Tyler ..... Aledo.
Minkler, S. G ..... Oswego.
McSpadden, James T ..... Neoga.
Nehring, W. H ..... Strausburg.
Pearson, John M ..... Godfrey.
Parrill, G. W ..... Farina.
Peunell, F. W ..... Danville.
Poscharsky, F. W ..... Princeton.
Perkins, W. H ..... Quincy.
Rockwell, C. B ..... Hamilton.
Rowley, C. S ..... Lacon.
Riehl, E. A ..... Alton.
Reymeyer, Henry ..... Jacksonville.
Shank, Daniel ..... Clayton.
Shank, John ..... Mount Sterling.
Strubler, Phil. ..... Naperville.
Swindler, H. J ..... Magnolia.
Sweeney, H. T ..... Salem.

Vandenburg, P. E ..... Jerseyville.
Vickroy, H. K ..... Normal.
Vaughan, J. G. ..... Odin.
Voris, F. D ..... Odin.
Williams, J. R ..... St. Louis, Missouri.
Webster, Jabez ..... Centralia.
Wier, W. T ..... South Henderson.
Warfield, B. C ..... Sandoval.
Williams, L. E ..... Keokuk, Iowa.
Wilson, J. P ..... Olney.
Worthen, G. B ..... Warsaw.
Wagner, F. M ..... Quincy.
York, Jasper ..... Olney.

HONORARY MEMBERS.

Brackett, Col. G. B ..... Denmark, Iowa.
Brown, Mrs. H. D ..... Hamilton, Ill.
Bryant, Mrs. Arthur ..... Princeton, Ill.
Gray, Mrs. S. S ..... Hamilton, Ill.
Green, Mrs. W. H ..... Bushnell, Ill.
Hambleton, Mrs. B. F ..... Keokuk, Iowa.
Hammond, Mrs. A. C ..... Warsaw, Ill.
Johnston, Mrs. T. C. ..... Warsaw, Ill.
LaMonte, Mrs. W. H ..... Hamilton, Ill.
McArthur, Mrs. Rev. ..... Hamilton, Ill.
Ragan, Prof. W. H ..... Greencastle, Ind.
Rockwell, Mrs. C. B ..... Hamilton, Ill.
Speer, Henry ..... Butler, Missouri.
Worthen, Mrs. G. B ..... Warsaw, Ill.

PREMIUM LIST.

THE following premiums are offered for exhibits of horticultural products to be shown at the Annual Meeting of the Society to be held at Cairo, December 9–11, 1890. All entries, except Class V, to be confined to the State.

APPLES.

CLASS I.

		1st.	2d.
1.	Best five varieties, winter apples, for market	$5 00	$3 00
2.	Best five varieties, winter apples, for family use	5 00	3 00
3.	Best three varieties, fall apples, for market	5 00	3 00
4.	Best three varieties, fall apples, for family use	5 00	3 00
5.	Best plate winter apples for market	3 00	2 00
6.	Best plate winter apples for family use	3 00	2 00
7.	Best plate fall apples for market	3 00	2 00
8.	Best plate fall apples for family use	3 00	2 00

CLASS II.—FROM NORTHERN ILLINOIS.

		1st.	2d.
9.	Best five varieties, winter apples, for market	$3 00	$2 00
10.	Best five varieties, winter apples, for family use	3 00	2 00
11.	Best three varieties, fall apples, for market	3 00	2 00
12.	Best three varieties, fall apples, for family use	3 00	2 00
13.	Best plate winter apples, quality to rule	3 00	2 00
14.	Best plate winter apples for market	2 00	1 00
15.	Best plate winter apples for family use	2 00	1 00
16.	Best plate fall apples for market	2 00	1 00
17.	Best plate fall apples for family use	2 00	1 00
18.	Best plate Ben Davis	1 00	50
19.	Best plate Willow Twig	1 00	50
20.	Best plate Jonathan	1 00	50
21.	Best plate Grimes' Golden	1 00	50
22.	Best plate Minkler	1 00	50
23.	Best plate Domine	1 00	50
24.	Best plate Roman Stem	1 00	50
25.	Best plate Wealthy	1 00	50
26.	Best plate Maiden's Blush	1 00	50
27.	Best plate Snow	1 00	50

		1st.	2d.
28.	Best plate Red Canada	1 00	50
29.	Best plate Bailey Sweet	1 00	50
30.	Best plate Broadwell	1 00	50
31.	Best plate Northern Spy	1 00	50
32.	Best plate Cayuga Red Streak	1 00	50
33.	Best plate Talman Sweet	1 00	50
34.	Best plate Salome	1 00	50
35.	Best plate Stark	1 00	50
36.	Best plate E. G. Russet	1 00	50

CLASS III.—CENTRAL ILLINOIS.

		1st.	2d.
37.	Best five varieties, winter apples, for market	$3 00	$2 00
38.	Best five varieties, winter apples, for family use	3 00	2 00
39.	Best three varieties, fall apples, for market	3 00	2 00
40.	Best three varieties, fall apples, for family use	3 00	2 00
41.	Best plate winter apples, quality to rule	3 00	2 00
42.	Best plate winter apples for market	2 00	1 00
43.	Best plate winter apples for family use	2 00	1 00
44.	Best plate fall apples for market	2 00	1 00
45.	Best plate fall apples for family use	2 00	1 00
46.	Best plate Ben Davis	1 00	50
47.	Best plate Willow Twig	1 00	50
48.	Best plate Rome Beauty	1 00	50
49.	Best plate Jonathan	1 00	50
50.	Best plate Grimes' Golden	1 00	50
51.	Best plate Minkler	1 00	50
52.	Best plate Yellow Bellflower	1 00	50
53.	Best plate Winesap	1 00	50
54.	Best plate Northern Spy	1 00	50
55.	Best plate Wealthy	1 00	50
56.	Best plate Belmont	1 00	50
57.	Best plate Bailey Sweet	1 00	50
58.	Best plate Cayuga Red Streak	1 00	50
59.	Best plate Hubbardstons Nonesuch	1 00	50
60.	Best plate White Pippin	1 00	50
61.	Best plate McLelan	1 00	50
62.	Best plate Red Pearmain	1 00	50
63.	Best plate Pryor's Red	1 00	50
64.	Best plate Porter	1 00	50

CLASS IV.—SOUTHERN ILLINOIS.

		1st.	2d.
65.	Best five varieties, winter apples, for market	$3 00	$2 00
66.	Best five varieties, winter apples, for family use	3 00	2 00
67.	Best three varieties, fall apples, for market	3 00	2 00
68.	Best three varieties, fall apples, for family use	3 00	2 00

		1st.	2d.
69.	Best plate winter apples, quality to rule	3 00	2 00
70.	Best plate winter apples, for market	2 00	1 00
71.	Best plate winter apples, for family use	2 00	1 00
72.	Best plate fall apples, for market	2 00	1 00
73.	Best plate fall apples, for family use	2 00	1 00
74.	Best plate Ben Davis	1 00	50
75.	Best plate Willow Twig	1 00	50
76.	Best plate Rome Beauty	1 00	50
77.	Best plate Jonathan	1 00	50
78.	Best plate Pennock	1 00	50
79.	Best plate Domine	1 00	50
80.	Best plate Newtown Pippin	1 00	50
81.	Best plate Minkler	1 00	50
82.	Best plate Fink	1 00	50
83.	Best plate Northern Spy	1 00	50
84.	Best plate Grimes' Golden	1 00	50
85.	Best plate Smith's Cider	1 00	50
86.	Best plate Winesap	1 00	50
87.	Best plate Pickett's Late	1 00	50
88.	Best plate Rawles' Janet	1 00	50
89.	Best plate Yellow Bellflower	1 00	50
90.	Best plate Winter May	1 00	50
91.	Best plate Pryor's Red	1 00	50
92.	Best plate Huntsman	1 00	50

CLASS V.—NEW FRUITS.

		1st.	2d.
93.	Best collection of new apples, not to exceed five varieties	$10 00	$6 00
94.	Best plate Seedling, good enough to be recommended	6 00	4 00
95.	Best plate, new variety, good enough to be recommended	4 00	2 00

CLASS VI—MISCELLANEOUS.

		1st.	2d.
96.	Best collection of Pears	$8 00	$4 00
97.	Best Plate Easter Beurre	3 00	2 00
98.	Best plate Winter Nelis	3 00	2 00
99.	Best plate Beurre D'Anjou	3 00	2 00
100.	Best plate Howell	3 00	2 00
101.	Best plate Keiffer	3 00	2 00
102.	Best collection of Grapes	8 00	4 00
103.	Best plate Concord	2 00	1 00
104.	Best plate Niagara	2 00	1 00
105.	Best plate Worden	2 00	1 00
106.	Best plate Catawba	2 00	1 00
107.	Best plate Cynthiana	2 00	1 00
108.	Best plate Pocklington	2 00	1 00
109.	Best collection of apples, not to exceed twenty-five varieties	10 00	5 00

CLASS VII—VEGETABLES.

		1st.	2d.
110.	Best half peck early potatoes	$2 00	$1 00
111.	Best half peck potatoes for winter and spring	2 00	1 00
112.	Best half peck onions from seed	2 00	1 00
113.	Best half peck onions grown from sets	2 00	1 00
114.	Best three heads celery	2 00	1 00
415.	Best half peck sweet potatoes	2 00	1 00
116.	Best half peck turnips	1 00	50
117.	Best half peck beets	1 00	50
118.	Best helf peck parsnips	1 00	50
119.	Best half peck carrots	1 00	50
120.	Bast winter squash	1 00	50
121.	Best head cabbage	1 00	50
122.	Best sample of salsify	1 00	50
123.	Best sample of winter radish	1 00	50

RULES OF EXHIBITION.

I. All entries must be in the hands of the Secretary on, or before, the Saturday preceding the meeting. The entry cards will be handed exhibitors the first day of the meeting.

II. All things must be entered in the name of the grower or manufacturer, and a statement to that effect MUST accompany the application for entry.

III. All exhibits MUST be on the tables by Tuesday, December 9th, at 7 p. m., properly arranged, and plainly and conspicuously labeled with the name of the fruit and grower and place of growth, and accompanied by a list for the use of the Awarding Committee.

IV. All entries shall be limited to the State except New Fruits and Seedlings.

V. "Plates" of fruits—except grapes—shall consist of four specimens, neither more nor less. The same variety may compete for different premiums, and different varieties for the same premium, but separate samples must be furnished for each entry.

VI. Competent committees will be appointed to make the awards, who will be governed by the following

SPECIAL RULES.

1st. The condition and general appearance of the fruit—which should be in its natural state, with all its parts—stems and calyxsegment—well preserved, not wilted nor shriveled.

2d. The size, in apples and pears, particularly, should be average, and neither overgrown nor small—the specimens should be even in size.

3d. The form should be regular or normal to the variety, and the lot even.

4th. The color and markings, or the surface, to be in character—not blotched nor scabby.

5th. When comparing different varieties, and even the same kind, grown on different soils, the texture and flavor are important elements in coming to a decision.

In Grapes we must consider and compare the form and size of the bunches, the size of the berries, their color, ripeness, flavor and condition.

6th. A fruit that has been named and passed upon by a Horticultural Society shall no longer be considered a "seedling," and a fruit that has been introduced and named ten years shall no longer be considered "new."

7th. All applications for entry of seedling and new fruits must be accompanied by a full statement of its origin, habit of growth, hardiness and productiveness, or no entries will be made.

The Secretary desires to call particular attention to the I. II. and III. rules of the exhibition, as he has been instructed by the Board to strictly enforce them.

LISTS.

The following lists of apples are recommended for planting in the three Horticultural Districts of the State.

FOR SOUTHERN ILLINOIS.

Early Summer—Benoni, Red June, Early Harvest.
Late Summer—Chenango Strawberry, Lowell, Maiden's Blush.
Fall—Jonathan, Mother, Grimes' Golden.
Winter—Ben Davis, Winesap, Minkler, Rome Beauty.
Recommended for trial—Yellow Transparent, Fink, Niel's Keeper, Pickett, Crain's Spice, Indian, Black Twig.

FOR CENTRAL ILLINOIS.

Summer—Red Astrachan, Benoni, Duchess.
Fall—Maiden's Blush, Wealthy, Ramsdell's Sweet.
Early Winter—Jonathan, Grimes' Golden.
Late Winter—Ben Davis, Willow, Minkler.

FOR NORTHERN ILLINOIS.

Summer—Benoni, Duchess.
Fall—Maiden's Blush, Cayuga Red Streak, Fameuse, Wealthy.
Winter—Jonathan, Ben Davis, Willow, Roman Stem, Minkler.

The following list of pears is recommended for general planting.
Pears—Tyson, Seckel, Keiffer, Flemish Beauty, Howell.

The following list of vegetables for the farmer's garden was recommended by the Society at the last annual meeting:

Asparagus, Radishes, Lettuce, Peas, Beets, Onions, Salsify, Cabbage, Tomatoes, Bush Beans, Sweet Corn, Lima Beans, Cucumbers, Melons, Rhubarb, Horse Radish.

The following lists of trees and shrubs are recommended as suitable for the purposes named:

FOR LAWNS.

Trees—Elm, Hard Maple, Magnolia Accuminata, Linden, Tulip Tree, Catalpa Speciosa, Birch, Mountain Ash, Norway Spruce, White Pine.

Shrubs—Syringa Philadelphus, Snow Ball, Upright Honeysuckle, Strawberry Tree, Fringe Tree, Purple Leaved Berberry, Lilac, Flowering Almond, Spirea Van-Hauttii, Flowering Quince, Hydrangea-P-Grandiflora, Calycanthus.

Climbers—American Ivy, Scarlet Honeysuckle, Fragrant Honeysuckle, Clematis Jackmanii, Wisteria.

FOR SCHOOL YARDS.

Elm, Ash, Hard Maple, Catalpa Speciosa, Linden.

FOR THE ROAD SIDE.

Elm, Linden, Hard Maple, Ash, Catalpa Speciosa.

PROCEEDINGS

OF THE

THIRTY-FOURTH ANNUAL MEETING

OF THE

Illinois State Horticultural Society

HELD AT

HAMILTON, DEC. 10, 11 AND 12, 1889.

THE Society convened in the City Hall in the City of Hamilton, December 10th, 1889, with President Dunlap in the chair.

The President invited Mr. Humphrey, of Quincy, to make the opening prayer, after which Mayor W. C. Bridges delivered an address of welcome, as follows:

Mr. President, and Members of the
Illinois State Horticultural Society:

In the name of the City of Hamilton I bid you welcome: but this word welcome, which expresses so much, expresses but in part the feelings of the City of Hamilton toward you. We trust that your deliberations here may be full of harmony and result in profit and credit to the Society, and be of advantage to us all. And we trust that if ever you are called again to Hamilton, either individually or as a society, you will feel that there is a warm welcome always awaiting you.

Response by President Dunlap: On behalf of this Society I accept this welcome. We have met the people of Hamilton before and we knew that in coming here we were welcome. We knew that we could not go to any place where we would be more welcome than here. We came to this side of the State, which is somewhat out of the way of most of us, because we knew of the welcome we would receive.

REPORT OF THE COMMITTEE ON ORCHARDS.

BY F. I. MANN, GILMAN.

An apple is a thing of life. It is the developed protector of the new life within seed. As its development by nature is for the purpose of protecting the seed, we should endeavor to know the relations existing between this development and the seed.

One of the important points in growing apples, is the growing of the perfect fruit. No matter how large the crop, it is comparatively worthless if misshappen and imperfect, which generally intimates poor keeping and poor quality. From my own experience, I cannot but question but that many of the imperfections can be overcome by the use of arsenical spray, especially when the imperfections are caused by the codling moth and some other enemies.

But the cause of much of the imperfect fruit can be found in the relations existing between the seed and the fruit. An apple, like all life, has an uncertain amount of faulty environments to overcome. The conditions for its development are probably never absolutely perfect, and it takes more or less vital force to overcome these faulty conditions. It may be generally supposed that the parent tree furnishes all this vital force, but such cannot be the case, or we would raise apples without seed as well as with them. The tree must supply the food for the development, but it would seem that the vitality is supplied through the seed. A careful examination of the seed portion of many apples, reveals much from which to draw conclusions. When the season of pollenization is finished, many of the partly developed apples, from time to time, fall to the ground. Those that fall the first few weeks are rarely found to enclose fertilized seed. Some of them may have one or two good seeds, but few, if any, have a full quota of perfect seed. As the season advances those that drop are mainly those whose seed have been affected by worms, and those not having a full number of strongly pollenized seed. Their environments have been made too acute for their vital forces. When the growing season is finished, the small apples will be found to contain but few seed, as a rule. And if the season has been very favorable for their growth, a few will be found of small size without any seed whatever. The apples that are one half well developed and one half dwarfed, will be found with good seed in the developed side and no seed or poor seed in the dwarfed half. Apples with blemishes will be found not so well seeded as the perfect ones. When the harvest is done the life of the apple is not yet ended. Its purpose is to still longer protect the life it encloses, and the duration of its existence depends somewhat on having that life to protect. If the seed is weak, or injured by the admission of air through a worm hole, the tendency of the apple is to decay more rapidly. An apple that keeps the best, other things being

equal, and the one that grows the best, is the one which has its full quota of full healthy seeds. It will be held by some that the seed itself has no effect whatever on the development of the fruit; that weak or non-fertilization need not result in a poor development of the fruit; that the sickly apple and weak seed may both result from a common cause, and that the one is not the result of the other. Absolute proof on this point it may be impossible to give, but the circumstantial evidence is very much opposed to this view. From the fact that apples will not grow without seeds, development of the fruit is in proportion to the development of the seeds, as to number and quality; that many apples drop that have no apparent injury but only a lack of fertilized seed; that in a developing apple the presence of larva does not seem to affect the develoment until the seed becomes involved; that trees that are under the best condition for producing good seed are the trees that produce the most good fruit; we must conclude that good fruit is more or less dependent on good seed.

In the production of apple seeds, which are new beings, we should remember that they are subject to the same laws of re-production as are other beings; that a proper diversity in the characteristics of the parents is essential. This is best obtained by affording nature the greatest opportunity for fertilization by the use of pollen from different varieties. Trees so situated that they do not receive pollen from other varieties, will not mature good fruit under conditions as adverse as will trees that do receive pollen from others.

HOW TO MAKE AN ORCHARD.

BY S. G. MINKLER, OSWEGO.

I am called upon to write on orchards. The Secretary did not say what he wanted me to write about, whether location, how to plant, or what to plant.

It seems almost superfluous to write on orchards, since there has so much been written, line upon line, here a little and there a little. Now that I am not restricted, I will take my text: How to make an orchard.

First, *Location*. This should be contiguous to the dwelling; but we cannot always have things just to our fancy, therefore we have to take things as we find them. If the ground is not suitable near the dwelling and you have better further off, choose that. It should be dry, or made so by tiling. Bear in mind that fruit trees will not stand wet feet. Exposure. Now, as I said before, we have to take things as we find them, but would prefer northern and eastern to southern exposure.

Second, *Preparing the Soil*. If the soil is not in good tilth, make it so, as if you wished to raise one hundred bushels of corn to the acre. But this should be done one year previous to setting

the trees. Too heavy manuring would be injurious, if it should come in immediate contact with the roots. Plow deep and thoroughly cultivate.

Third, *Distance Apart.* Two rods, forty feet is better; anyone conversant with tree roots knows that they run a very great distance from the trunk. If trees are set two rods apart, and well cultivated for six years, their roots will meet. Then they become robbers.

Fourth, *How to Set.* Well, it is presumed that everyone knows how to set a tree. But I will say this, set two inches deeper than they stood in nursery. Remember that the ground settles, but the tree does not. Pack the ground thoroughly about the roots in setting, too, within two inches of the top; finish with mellow earth. Then mulch. I will not use the word holes, because the whole field should be pulverized to the depth you set your trees.

Fifth, *Now Protect your Trees.* You know that when people set trees on a lawn or boulevard, they protect them by hay or straw rope wound around the trunks from the ground to the limbs. Now take warning. There are various ways of protecting your trees. Take long slough grass or rye straw, tie three times with string—lath may be used, three or four laths fastened by light wire, or if you want a neat thing, buy wire cloth, cut it of suitable width, fasten with fine wire. Why, most of you have old screen-doors or fanning mill sieves, or old stove pipes. These will keep off the mice and rabbits. But protect the trunks of your trees. I consider this the most essential part of all the tree-planting. You must protect the trunks from the direct rays of the sun or you will not succeed in orcharding. I should have said above to lean the tree about forty degrees to the two o'clock sun; now drive a stake on the two o'clock sun side of the tree one foot from the tree; twist a straw or hay band, put it around the tree, put the ends together and twist hard, then open the ends and put around the stake and tie firmly. Now, you say, what is that for? Well, it is to keep the tree from rubbing the stake, and ward off the whiffletrees. You say there is too much leaning. Better lean to the southwest than the northeast. You will find that your trees will be erect enough when established.

Sixth, *Height of Top.* I used to favor low tops for the reason that it protected the body from sun-scald, but now I want the trunk of sufficient height to conveniently work the land. Now if you have complied with former directions, remove the bandage once a year, say in May, and wash your trees with strong lye. (The only thing that a man is justified in lying about, if his lye is only strong enough.) Then replace the bandage or protection. If you are too lazy to protect your trees and wish to keep the rabbits off, take from the privy vault, and with an old broom or

swab smear them, say in the fore-part of December. One application is usually sufficient, for the year.

Seventh, *Varieties*. Choose those varieties that do best in your locality, and get your trees from a reliable source; for it is a sad loss to pay for a thing, wait five or six years, and find yourself sadly disappointed. Do not plant too many varieties. I think the list recommended by your society is a good one. Do not go too fast on Russians at forty cents.

Eighth, *After Treatment*. The orchard should be kept in good cultivation for at least six years, with some hoed crop. Cultivation is one mode of mulching. Use corn one year, potatoes one year, Hubbard squash one year, pumpkins one year, beans one year, and buckwheat one year. Now your orchard is six years old, and has probably come into bearing. If you wish to seed down, seed with clover, let it lie for mulch. Your orchard is complete, now enjoy its fruits. Turn in your calves, your sheep, your colts, and pigs, and you will not be bothered with sun-scald, codlin-moth, twig-blight, tent caterpillars, or fruit thieves.

Let me say in conclusion that the orchard is the most abused piece of ground on the farm; it must produce a crop of apples, a crop of hay, and afford calf pasture. And nothing returned to it. Any kind of grass that forms a sod will destroy an orchard much sooner than plants that do not turf. These turfs in addition to exhausting the plant food in the soil, exclude the air. And I attribute the failure of our orchard to starvation.

DISCUSSION.

Dr. Humphrey—I have planted orchards for about twenty-five years and I think I am now beginning to learn a little about planting them. I want to plant one next year and see if I can't have apples of my own raising when I grow old. The bare fact stares us in the face that the orchards of Illinois have wasted away. Does it result from faults in planting, or is it from climatic reasons? Last year we were overloaded with apples in our part of the State, and this year we are getting them from Iowa. It certainly is not because we need new varieties, because I know of Roman Stems that are sixty years old and are still bearing. I also know of many later planted orchards that are broken down.

Mr. McKinney—Some families of animals are long lived and some are short. It is the same way with apples, some are short and some are long lived. We need to plant more new orchards.

J. M. Pearson—I have seen an orchard planted and the first or second year after planting, cultivated in potatoes. At times such

a cultivation starts a second growth which is, of course, bad. I would not have potatoes in an orchard unless they were to be dug not later than July, then perhaps there would be no longer danger from cultivation.

President Dunlap—I have frequently manured my orchard trees by seeding to rye and plowing it under when it got two or three feet high, and I must say it has had a good effect. The question of protecting trees both in summer and in winter is an important one. Mr. Stickney, of Wisconsin, protects his trees with straw, and he says also that it keeps off the borers, though I don't see how that is so.

Mr. Dyer—For four years I have been using common axle grease on my trees to protect them from rabbits and mice. I just rub it thoroughly on the trunk and the mice and the rabbits never touch them. I have tried wrapping the trees with muslin, but it is expensive and the rabits soon cut through it. I put the grease on about the beginning of the winter and find it perfectly satisfactory.

Mr. Webster, of Centralia—I do not think it is best for this Society to recommend an animal fat for application to trees. We protect our trees with soft soap and copperas and sometimes a little carbolic acid. It is cheap and effective. If we want the application to stay on all winter we add a little glue. Some have experimented with tar and tarred paper, but we think there is nothing so good as soap.

Sec'y Hammond—How is the tarred paper an injury? I have used it and never saw any bad effect from it.

Mr. Webster—We have found that it has a tendency to loosen the bark. I have seen the bark all come off after it was used. If it was tied on very loose, it might not be so bad, but if it is tied at all tight, I have found it to injure the trees.

Mr. Vandenburg—I recommend sweet milk and soot. I have also used tarred paper and seen no bad effects. I tie it on loosely with wire as the wire does not rot like string.

Mr. Pearson—With regard to the distance of trees in an orchard, I think that no one distance can be given as satisfactory. In some cases, with trees that throw out strong laterals, the space of course, should be greater than for upright growers. I think the distance should be varied from twenty-five to forty feet.

Small growers should be close to aid in keeping down the grasses, for one thing. The Pennock should have much space. Another thing: We let our orchards get too old. When an orchard is twenty-five years old it is time to grub it up. I would not thank a man for the gift of an orchard twenty-five years old, even though he let me select the trees. Take such apples as the Northern Spy and the Newton Pippin, for instance, their time of bearing would be so short that they would not pay.

Dr. Humphrey—I would like to know what the gentleman in his report, (Mr. Mann) means by strong pollenization.

Mr. Shank—I do not think that the perfect fruit depends on pollenization. Take the banana, for instance, it never bears seed, and is one of the most prolific plants that grows. In that case there is no pollenization. Grapes are also produced without seed, especially for raisin grapes, and it seems to me that so much pollenization does not seem necessary.

Mr. McKinney—I am simple enough to believe that the strawberry does best with all the pollen it can get; while one particle of pollen might make a good seed, I think more pollen would be better.

Mr. Mann—There are conditions of environment with the production of perfect fruit, and to make the perfect fruit, I think the environments must be correct. Of course, in the case of raisin grapes and bananas, there might seem to be an exception, but I saw last week a grape that had been cultivated without seed, and I found it to be a very shy bearer. My information as to the banana is, that it does have pollen and that the influence goes to the fruit and not to the seed. I am satisfied that it requires the strength of the perfect seed to overcome adverse environments and make the perfect fruit.

Dr. Humphrey—The fruit is a transformation of the flower, and pollenization has reference to fructification. This must take place as among the sexes. If the stamens are in different individuals, the fruit is supposed to be different, that is, there comes variation from parental forms, while if the pistils and stamens are in the same blossom, the principle of variation does not hold. Fructification has more reference to the seeds than to the form of the fruit growth.

Mr. Mann—We are not discussing the question of form, but we cannot expect heredity in form from fruit that has no fixed type in form. We do not expect our apples to reproduce their exact forms. The influence we are talking about is the development of the fruit. I have cut many apples, and almost always find poor seeds in the small ones. Take the Willow Twig, and where one side of the fruit is not developed, that side will have few if any seeds, while the other side of the apple will have seeds.

Mr. Webster—We are getting into deep water, and I think there is no likelihood of our touching bottom. I do not think we are ever going to know much about pollenization. I saw, this year, an apple one-half of which was sweet and the other half sour.

Mr. Cotta—The trouble with our orchards has been the curculio, principally, though faulty pollenization has been the cause of some of the trouble. The Willow Twig is one of the sorts the most affected, both with us and in the southern part of Wisconsin, though that trouble has come mostly from the curculio. I have seen many specimens so faulty that you could scarcely tell the variety. I was much pleased with the paper of Mr. Minkler with regard to the cultivation of orchards. I prefer corn in the orchard to anything else.

L. E. Williams, (Lee Co., Ia.) I wish to say a few words on shelter of orchards. I know orchards in Lee Co., which are sheltered by the Mississippi bluffs that almost always do well. I have a sheltered orchard, and on five acres I have frequently had more apples than a friend of mine has had on forty acres unsheltered. I know, where they are sheltered in Colorado they also do better.

President Dunlap—We are trying to raise apples in Illinois and not in Colorado. I presume we want to know how to raise them here.

Mr. Bracket, (Lee Co., Ia.) Mr. Williams attributes the success of his orchard to shelter of the bluffs, but there is one thing that he has overlooked, and that is the soil. You take southwestern Iowa, where there is no clay sub-soil, and we have there the most perfect fruit belt in the State. As to the shelter of the Mississippi bluffs, that section of the country is very limited and can have no very extensive orchards. When I made our collection for the New Orleans Exposition I looked around in Lee

County, and from the appearance of our fruit I despaired of success, but I found plenty in the southwest where there is no clay sub-soil. Of course the difference in varieties is also to be taken into account. It is not climate so much as it is soil that affects the orchards. The Bellflower does well on sandy formation, but on the clays it is worthless.

Mr. Pearson—Will some one tell me whether the orchard pays or not?

Mr. Webster—Yes sir, it pays down in our country. From Centralia, apples are shipped by the hundreds of car loads. Some have made this year from their orchards from $150 to $200 per acre. In some cases the buyer takes the best of the fruit and leaves the culls to the raiser. Thirty years ago I heard it said that the apples then being put out would never pay, but the truth is that apples are worth more in Centralia to-day than they ever were before. I must say, however, that the early varieties do not pay with us.

Mr. Pearson—Was not this a better year than common with you?

Webster—Yes sir, I think so. I know one man who came from New York and bought fifty-seven car loads and took them East and canned them and brought them right back to St. Louis and sold them for New York apples.

Mr. A. Bryant—I cannot answer whether the orchards of Bureau County have paid or not.

Mr. L. R. Bryant—Our orchards have paid up there, and if I had a chance to plant I would do so and would expect them to pay.

Mr. Pearson—As to planting trees forty feet apart, I do not think I can spare land enough for that. My idea is that a tree in twenty years will give me all the fruit that it will give profitably. I know the most of the older trees give fruit only fit for cider. The young orchards are the only ones that have paid with us.

Mr. Dennis—I heard a gentleman make the remark that the average age of our orchards was twenty-five years, and he said that in that twenty-five years they would produce as many apples as trees in the East would produce in fifty years; he thought that

the most prolific bearing of our trees exhausted them just that much sooner.

Mr. Webster—I have been told by a New Yorker that we acted on the principle of having a good thing and not wanting people to know it. He said that New York could not compete with us at all, that Southern Illinois was wonderful; that they could not begin to raise apples with us. Of course this year is a little better than common. Buyers sometimes come to buy Ben Davis straight, and some plant these altogether. There are many orchards in Southern Illinois that have no varieties in them but Ben Davis, and this proves that when the conditions are favorable you can produce perfect Ben Davis without another variety mixed with them.

Mr. H. Brown, of Hamilton—Will an orchard pay? I will say it will not. It will not if you go into that business exclusively and I challenge any man to show that he makes a living out of an orchard exclusively. He either has a nursery, or a vineyard, or a corn field, or something of that sort to help out the orchard. I have been in the business for twenty years. Last year I got over one thousand bushels, and this year I got twenty-five.

Mr. Cotta—Orchards must be made to pay. There are millions of coming mouths which must have apples, and there is no doubt but that good apples will give paying prices. There has been large planting of summer apples, but where are the winter apples coming from? They must be planted. I have been pegging away for about twenty-five years and I have suffered very much, but I am not going to give up. Some one has got to be a missionary and I might as well be one as any one, if I can make it pay a little.

Mr. McKinney—The first thing to be considered is location, and another thing is that there has been too much fooling around about Russian varieties and the like; I think that must be stopped.

Mr. Pearson—I am inclined to agree with Mr. Brown in not advising a man to plant an orchard and depend on it for a living, but I don't know of a line of farming that I would advise him to undertake; you must learn to diversify. I have wheat in, but I have not worked in wheat since September, and will not before July. What must I do in the meantime? I had two rows of Rawl's Janet that I didn't pick an apple from this year, and yet, they paid me more

for cider than the land would have paid me for wheat. I had the boys shake them off and haul them to the mill. My wheat paid me $7 per acre, and those Janets paid me twice that. We just picked them up, rotten ones and all, and made tip top cider.

Mr. Bryant—I knew an orchard where a good many of the trees had died, but the farm changed hands and the man who bought it said that the old orchard was the best paying portion of the farm, notwithstanding the fact that the half of the trees were dead, and he was making calculations to put out one thousand two hundred more trees.

President Dunlap introduces Mr. Bracket, of Iowa, and Messrs. Spear, Patterson and Thomas, of Missouri.

REPORT OF COMMITTEE ON RASPBERRIES AND BLACKBERRIES.

BY P. E. VANDENBERG, JERSEYVILLE.

Mr. President and Friends of our Society:

I doubt whether I can give you anything that will be new to you old fruit growers, or be of benefit to those that are just starting out. This is simply a report of a small part of our great State, and the kinds and ways one man grows blackberries and raspberries in Jersey County. We had a good crop of both blackberries and raspberries, which, on the whole, was disposed of at a fair price. Of course there were some that did not realize what they anticipated, but whether from their own neglect, or from growing the wrong kinds, has not been made known. We have had no second growth this fall, consequently wood is matured and goes into its winter's rest in good shape.

First, *Blackberries*—I grow only the Snyder for a main crop. They are early, being nearly gone when wild ones come into the market. They are hardy and productive, bearing every year in quantity as you treat them. Trim closely, leave berries on bushes till ripe and they are hard to beat. I have tried the Taylor. They are not hardy with me, and are hard on clothes. I let them go. Kittatinny rusts too badly, and winter kills—that went also. Early Harvest I had, but was too far north, and that I dropped. Lawton I tried in a small way and gave that up. Erie,(some call it the Lawton,) I have not yet tested enough in the cold winters. I want a late berry, and am going to give Lawton another trial. I have a friend who grows only Lawton, and will grow no other, and he is successful both in wintering and with the rust. I think I

have his secret, and whether I succeed or fail you may hear from me again.

Second, *Raspberries*—In Raspberries I find obstacles in the way to perfect success. Turner, or Thornless, for a home market, cannot be beaten; hardy, rank grower, and immensely productive.

Hansell, the earliest red, stays in bearing a long time; hardy, a moderate grower and a good shipper.

Brandywine has done very well with me, grows about like Hansell, a good shipper also. Cuthbert, or Queen of the market, (as she is rightly named,) is a superb berry, very large, rank grower and the best shipper of the reds. If it would yield as well as the Turner, it would be King as well as Queen of the market.

Marlboro is one of the finest of reds, but I have not found it profitable to extend the planting. Crimson Beauty has the same good qualities, but it also has its faults.

I like Golden Queen. It has done well, but I have not tested it on the foreign market. It can grow suckers as prolific as the Turner and as rank as its parent. Souhegan, or Tyler, stands at the head of the black-caps. For profit, productiveness and hardness it has no equal.

Hopkins follows after; something similar, though not so early.

Next comes Ohio, a rank grower, very productive, and perfectly hardy, very profitable.

Gregg, I grow only to lengthen the raspberry season. They are not perfectly hardy.

Third, *Planting*—Of course the ground is prepared as for any crop. I then set stakes or lathes for 5 rows, 8 feet apart, then a 12 foot alley, then 5 more rows, and so on. Then take a two-horse plow, with a rolling coulter, open furrows where rows are wanted as deep as required, and proceed to plant, throw enough dirt on root to hold in place, take diamond plow and fill up furrow and finish off by pressing dirt firm around each. I plant blackberries 2½ feet, black raspberries 2 feet and red raspberries 1½ feet apart in the rows.

Plant only young plants from root cutting when possible.

Blackberries and red raspberries I plant in fall when I can. Black-raspberry tips I take up in the fall and lay in shallow furrows about three or four inches apart, cover nicely and mulch. I leave them there till they grow about 6 inches high, when I plant same as I planted blackberries. In this way you get a perfect stand and get a chance to work the old beds.

Fourth, *Cultivation*—I start cultivating as early in the spring as possible, and keep it up till berries begin to ripen, then again after beries are ripened till about August 15th. If possible I cultivate again once before winter.

The Diamond plow and Planet Jr., cultivator, hoe and fork, are the tools I use.

Fifth, *Pruning*—When blackberries and black raspberries are knee high I pinch the top, when laterals are about 1 foot long, I pinch them again, I only pinch once on Gregg.

Strong growing canes of reds I cut back hip high. To keep plantation healthy, keep all suckers cut off with hoe or cultivator. I think it best to remove old wood soon after berries are off, it makes nicer work, is easier to keep clean, though I confess I do not always do it, leaving it till later.

In trimming in the spring I clip off all tips of blackberries being careful not to leave too much wood on.

Black Raspberries, when they begin to bend to the ground, cut off.

Reds, I find to cut off one third, and the rankest, about hip high to be about right.

Sixth, *Mulching*—must be done with care. I like to mulch after the fall cultivating, leaving it undisturbed till spring, when it is all worked up among the canes. Some prefer to mulch about blossoming time. I have, with good success. I use for this purpose horse-stable manure where plenty of straw is used. Old straw or cornstalks make excellent material.

Seventh, *Marketing*—Ours is a home market. Only now and then when we are sure of a surplus do we ship, and then to small towns beyond us. We pick every day but Sunday, deliver to our customers direct from wagons or through our home grocers, taking orders for crates days ahead, thus having control of our large pickings in our own hands, to a great extent. With our pickers we use the card and punch, writing name of berry on card and file away for final count. We pay for blackberries 1 cent, for black raspberries, 1½ cents, and red raspberries 2 cents per quart.

Eighth, In closing, I would state, my berries are all grown on clay sub-soil with natural drainage, sloping mostly to the north. I don't think I could grow berries successfully on my farm without mulching. If any of our friends have had a different experience I would like to hear from them.

Submitted for your consideration.

DISCUSSION.

Mr. Thomas, Lagrange, Mo.—I have grown the Snyder successfully for five or six years. Get the ground in good shape and plant about as you would potatoes. Cut the roots to about four inches in length and lay off the rows about ten feet apart, with cross rows three feet. Plant two plants in a hill. This year I had 100 bushels to the acre, this being the third year. The Lawton would not do with us at all, it is too tender and subject to rust. The Taylor is pretty good after a mild winter, but they are

too late for our location, for we have to ship north. They are in good shape when the Snyder is going out. My location is on the Mississippi river, on the second bottom. After I get my plants out I give them thorough cultivation for two years, and I then seed down to red clover. Cut the clover about the time the berries begin to ripen, and leave on the ground for mulch.

Mr. Shank—I am growing fifteen acres of berries. My blackberries are principally Snyder. I cultivate until they begin to bend to the ground. I advocate *thorough cultivation* for both blackberries and raspberries.

Mr. Jackson—I plant differently. I plant the first two rows about seven and a half feet apart, and the next row about ten feet from the second, so that I can go anywhere in my plantation with a team, for hauling in mulch or anything of the kind. I have not had so much experience as the last gentleman, but I had enough in berries to lose money this year. I do not think any absolute rules can be laid down for cultivating and pruning, but I cut the Snyder back to eighteen inches the first cutting, and never prune more than twice.

President Dunlap—Have any of the members experimented with the Ancient Briton? I saw some very fine ones in Wisconsin this summer, and was highly pleased with them.

Mr. McKinney—As to the Ancient Briton, I have had some experience with it. It is occasionally very productive. It is larger than the Snyder—nearly as large as the Kittaninny. But the profit in growing it would hardly be worth working for. I do not think it productive enough from year to year. Once in a while it bears well and then fails almost entirely.

Mr. Humphrey—I have raised the Ancient Briton a good many years and my experience is such that I intend to keep raising it, but not largely. It is too soft to ship, but it is a most luscious berry. I keep, therefore, a few rows and re-set them every few years. I got my first stock from Mr. Stickney, who used to have a nursery in this place. I raise it for home use, but not to ship. I doubt its being as productive as the Snyder, though mine have done very well. But it is an awful vine. I sometimes think that it will scratch a man before he gets to it. It is perhaps a week or ten days later than the Snyder.

President Dunlap—Mr. Hammond and I saw the Ancient Briton fruiting in Wisconsin this summer on the grounds of Mr. Tuttle and I never saw as heavy a crop of blackberries as there was there. He expected 10,000 quarts of berries this summer. He had grown the Snyder on the grounds there and he said he thought the Snyder no comparison to it at all, so far as profit was concerned, and that he had had five crops in as many years. He covered the vines with a light mulch and said that one crop of fruit more than paid for the expense and trouble of mulching. He thought they were as hardy as the Snyder.

Mr. Dennis—We have been growing the Ancient Briton. The great objection to it is that it is so very tender. You can hardly carry it to the house without its breaking or bleeding. The vine is hardy but the fruit is tender.

Mr. H. D. Brown—Let's have the dewberry investigated. In my opinion the Lucretia berry is a fraud.

President Dunlap—The berries I have seen are insipid. They are very large and fine looking, but tasteless.

Mr. Shank—It depends on the location where the berry is grown. I find that on poor soil it is a success, but when they are on good strong corn land, they are no good; they are like the Kittaninny. You get fine looking berries, but when you come to eat them they are bitter.

Mr. Beeby—My experience with the Lucretia is that if you don't catch them just at the right time, you are left. When they are too ripe they are insipid or sour, and two days before that they are tasteless as a corn cob. I think they are a humbug.

REPORT ON STONE FRUITS.

BY LOUIS FRESE, COATSBURG.

My report on stone fruits will not be very complete, as stone fruits have not been fruiting well the past years, with the exception of plums, in this section, Central Illinois.

Peaches this year have, for the first time since '82, borne a fair crop. Budded peaches were scarce, as farmers and fruit growers have not been setting many the past eleven years. Have fruited on our fruit farm this year Oldmixon Free and Stump; they are too well known to need description. Fruit from these sold readily at $2.50 per bushel. The early budded peaches rotted on the trees

before they ripened. Seedling peaches sold at $1 per bushel. They were spotted and scabby, but people were anxious to get them at that price. The trees havemade a fine growth this season, and there is a prospect of another crop next season if Jack Frost does not kill the buds. Have sold more peach trees out of our Nursery this fall than we have for several years. The crop we had this summer has encouraged the farmers and fruit growers and I think there will be a good demand in the spring for trees. Trees of apricots, Russian and American, have been largely planted the last few years, but owing to their early blooming the frost kills them before the fruit sets and so we have not had any in this part of Illinois.

Cherries bore a good crop the past season, it being the first crop that we had for several years. Early Richmond, English Morrellos, May Duke and Montmorency are mostly grown here but the latter seem to take the lead.

Plums seem to be taking the place of peaches in this section. Six years ago we set out an orchard of one hundred and fifty trees of the Wild Goose, Chickasaw and Miner, setting fifty trees of each kind. We had three full crops in succession of the Wild Goose and Chickasaw, whereas the Miner has done no good for us.

Have heard it said that Miner trees do better as they grow older. A neighbor of ours has a tree about fourteen years old that bore good, large, sound plums for several years. The Wild Goose is certainly a fine, large plum for all purposes, but the Chickasaw we have is the largest yielder. In the year 1888 we had one hundred bushels of good, sound Chickasaws and fifty bushels of Wild Goose; the past season we had one hundred and twenty-five bushels of Chickasaws and one hundred bushels of Wild Goose. The Chickasaws we have were brought from the South. They are not budded, but sprouts. They are distinct from any other Chickasaws that we ever heard of or saw. It is yellow, with a red cheek, is not as large as the Wild Goose. It is rich, sweet, juicy and suitable either to be eaten out of the hand or for cooking purposes, ripens about a week later than Wild Goose. It is an enormous bearer, the limbs being literally covered with fruit. We cultivated our orchards the first two seasons, but since then we have not worked the ground; neither have we sprayed the trees. We do not pick our plums when they begin to ripen, but give the trees a gentle shaking every day and are particular to gather all that fall. Then we take them to a shed and sort them, putting the good sound ones in quart boxes and throwing the waste to swine and chickens. This is what we think saves us from the Curculio which has not troubled our orchard so far. We sold our plums here at home, Wild Goose brought us in 1888, $1.75 per twenty-four qt. case, Chickasaw $1.50 per twenty-four qt.case. The past season, fruit being plenty, Wild Goose sold at $1.25 and Chickasaws at $1 per twenty-four qt. case. We have planted trees of

the Mariana, Potowatomia, De Soto, Wolf Free, Forest Rose, Robinson and several other new kinds. We have not fruited them yet. The Mariana bore a few plums about the size of the Wild Goose, of fine appearance. We have about five hundred plum trees now growing in our orchard and all are doing well, making good growth. At some future time we may be better able to give a more complete report. Our trees were planted sixteen feet each way.

DISCUSSION.

Mr. Gaston—I am familiar with the Wild Goose, the Mariana and the Chickasaw plums. I think the gentleman in his paper refers to the Newman plum. It seems to follow the Wild Goose; it is a week or two later. I think the name Chickasaw should not come in here.

Mr. Webster—We have at Centralia seven varieties of the Chickasaw plum. They are all more or less profitable. The Newman is one of our most profitable plums also.

Mr. Shank—I have never seen these plums fruiting, but I have had nearly twenty years' experience with the Miner. In regard to the Chickasaw, I think that is the name of a species.

Mr. McKinney—I have had experience with the Miner ever since it was introduced. I bought them at a dollar a piece from a man at Galena. It was ten years before they began to bear, and I am satisfied that the reason they began to bear then was because there were other plums by the side of them. They were surrounded by Wild Goose, but where they are isolated and the pollen from the other varieties does not reach them they do not bear.

Mr. Vandenberg—I would ask if any of the members have the Wild Goose separate from other trees that are bearing well?

Mr. Gaston—Where they are planted separate they are a failure, but where put by the side of the Miner and others they do well. At Lacon, one of our men has put out 900 different varieties.

Mr. Gay—I have two Wild Goose plum trees, and they are perhaps thirty or forty rods apart. They both bear well every other year. There is no other plum tree near them, not nearer than perhaps half a mile. One of the trees had ten bushels of fruit on it this year, actual measurement.

Mr. Shank—If it had not been for the bees, I think Mr. Gay would not have had any plums.

Mr. Webster—I know of a number of instances where plums do well and no other varieties near them. I put out trees in 1868, and those trees have borne enormous quantities of fruit. So, while it at times appears that trees of various kinds must be mixed, yet the rule does not always hold good.

Mr. Vandenberg—I know of one hundred trees five years old that have never borne, and in other places I have seen them scattered and bearing.

Mr. Webster—Most of our plums that are successful are grafted on the peach, but those I have are grafted on their own roots.

Mr. Shank—It is well known that the cherry will fertilize the plum, and this might account for the fertilization of Mr. Webster's plums, if any cherries were near them.

Mr. Beeby—A friend of mine has forty acres, and he planted, I think, a half dozen of Wild Goose, and sometimes there is a good crop and other years not any, and he has laid the trouble to the frost and sometimes to the curculio. Some of the old trees died and sprouts came up and bore the same kind of fruit, but there were no plums or cherries near them.

Mr. Gay—My cherry row is about twenty rods from the plums. My Flemish plum is on its own roots, and the others are on the peach; both bear every other year. I do not think they are pollenized by anything else unless it is by an old elm tree.

President Dunlap—I think it is generally understood that where plums are mixed they do better, generally, but not always.

Mr. Pearson—I dislike the idea of our talking here for an hour about a miserable plum that is not fit to eat. Nobody will have much to do with plums unless they are good ones. I have heard three varieties spoken of here, and three of that kind is three too many. For cooking, I think the Blue Damson is excellent. The boys won't steal it and the curculio won't hurt it. It brings in the market double what the others bring. I have seen, this past season, the Miner and the Wild Goose offered at sixty cents a bushel and no takers.

Mr. Shank—I believe I have struck something practical. You take the Wild Goose and the Marianna and they have a tendency to grow like the weeping willow, but I find by tying them up about the latter part of June with a soft string, drawing the limbs up in a close form and leaving them so until about the time the leaves begin to drop, and then the next season trim them back to where I want them, I find I can give them a desirable shape. I also tie cherries in the same way. I trim in June.

Mr. Webster—It takes some time to find out what to do. We have just found out how to raise Damsons. We think that after all the Wild Goose is the most profitable. It is very hard with us to get the Blue Damson free from the borer in the center. I presume, however, they could be kept off the plums in the same way as off the apples, with spraying. With us they ripen too early. After they are gone with us they bring them in from Ohio, and they sell readily to our people.

Mr. Shank—My experience is that the Damson is very tender. They run to top very much. The Old Virginia Blue is small, but it is hardy. I think the Lombard is far superior to the Shropshire. My objection to the Shropshire Damson is, that it is not hardy enough.

REPORT OF AD-INTERIM COMMITTEE FOR CENTRAL ILLINOIS.

BY F. I. MANN, GILMAN.

In the interests of this Society, and as member of Ad-Interim Committee, I attended the strawberry meeting of the Kankakee Valley Society, at Manteno. I found a gathering of pleasant, hospitable people, earnest in the cause of fruit growing. Though the weather was unfavorable, a large number were present to sit at the tables spread in the shade of large trees, and enjoy the strawberries and cream, with a bounteous supply of other delicacies. After dinner a meeting was held and various subjects of local and general interest were discussed. A fine lot of berries were shown for premium by Leon Hay, Len Small, Mrs. Barnard, the widow of our late lamented President, and others. The Bubach showed up the best, as some very fine specimens were shown.

The Bubach was very popular with those present, though there was some complaint that new beds were not prolific. The Seneca

Queen and Windsor Chief were very handsome plates, and seemed quite popular with the growers.

It was very much the desire of the committee to attend the rose and strawberry show held by horticulturists at Lacon in June; and excited by the display made at the State Fair by the Lacon fruit growers, we fully intended attending their September meeting. It is with regret we are unable to give any report of these meetings, more than to say that they were reported as being eminently successful, and carried on with some of the old vigor for which that region was noted.

It was deemed advisable for the committee to go outside its territory for some observations, and now while the northern apples are attracting so much attention it was decided to make there the base of observation, and we have the following report to make of such a trip:

NOTES ON WISCONSIN AND MINNESOTA TRIP.

BY HENRY M. DUNLAP.

The question for new hardy fruits for central and northern Illinois is one of leading importance at this time, especially the question of the adoption and value of the Russian fruits to this State. Knowing that the same questions had agitated the minds of fruit growers in the more northern States for a longer period, and in a more marked degree, it was thought to be a wise policy to see what had been accomplished there before we undertook the questions in our own experiment stations. Early in August, therefore, Secretary A. C. Hammond and myself started out for a trip through Wisconsin and Minnesota, being aided in the undertaking by railroad passes in Wisconsin over the Milwaukee & St. Paul and Northwestern lines. The notes of this trip I now present to you, together with the opinions of leading fruit growers that we met in our travels.

Arriving in Milwaukee on the morning of August 7th, after a night's journey on the boat from Chicago, we took an early train out to Wauwatosa, some five miles distance from the city. At the depot we were met by Mr. J. S. Stickney, one of the veteran horticulturists of the State. Mr. Stickney, in his carriage, drove us into the country, where we inspected a number of apple orchards and small fruit plantations. Some of the orchards bore good crops of fruit, and the varieties were mostly Duchess and Wealthy. In the older orchards were also Alexander, Snow and English Russett.

Utter's Red, of which we saw fine specimens on the trees, Mr. Stickney says, is fine fruit for family orchards, but of little value commercially.

Alexander is fairly well liked, inferior in quality, and trees blight badly.

Wealthy we saw in nearly every orchard, and with hardly an exception the trees were loaded with fruit. Mr. Stickney regards this quality of heavy bearing objectionable, on the ground that its tendency is to shorten the life of the tree, like the Ben Davis in our own state.

Duchess trees were everywhere loaded with fruit of very fine appearance, except in the case of Mr. Stickney's own orchard, where the fruit was badly afflicted with the work of the "little turk," scarcely an apple on 100 trees being perfect.

The most promising of the new varieties of apples in this locality, and one that Mr. Stickney regarded very highly, was McMahan's White. The tree is round-headed, a vigorous grower, with dark green foliage, fruit above medium in size, greenish yellow in color, in season about with Maiden's Blush. Mr. Stickney has planted largely of this variety, and if it does as well as its appearance indicates, it will be a valuable acquisition for that season of the year.

Observing some young apple trees with straw tied up and down the trunks on the south side of same, we were, upon inquiry, informed that this was to keep off the flat-headed borer and protect the young trees from the rays of the sun while they were getting started in their growth. This is an item worthy of trial at least.

In one orchard were a number of trees of the Kentish Cherry. Some of the trees were still loaded with fruit of excellent quality at this date, August 7th. The tree is very similar to Early Richmond in appearance, but the fruit ripens some two weeks later. It is regarded here as their best cherry.

Mr. Stickney marketed *sixteen tons of currants* from three acres of ground this season, at a net profit of $800. The varieties were mainly Prince Albert and Long Bunched Holland. These two varieties retain their foliage throughout the season while Fay's Prolific and Red Dutch, (though better in quality for the table,) grown side by side, were barren of leaves at this date. A further objection to Fay's prolific is that its stems are not sufficiently upright in their growth, reclining too much upon the ground.

We visited Mr. Bombier's plantation of small fruits and found everything in fine condition. The Jessie strawberry has done very poorly for Mr. Bombier. He still prefers the Crescent and Wilson for market. Of this season's planting we saw the Bubach in a thrifty condition, but he had not fruited it as yet. Of blackberries, the Snyder and Ancient Briton were his choice of varieties with no special preference between them.

Pewaukee was our next objective point, and Mr. Stickney very

kindly accompanied us on our visit to the fruit farm and experiment grounds of the venerable Mr. George Peffer. At the station we were met by his daughter, Miss Kate, who drove us through the village of Pewaukee to a place recently purchased by Mr. Peffer and designed for his future home. This is a tract of land located at the top of a hill overlooking a lake. The natural beauty of the place has been greatly enhanced by Mr. Peffer, under the direction of the former owner, by the planting of shrubbery, evergreen and ornamental trees. Mr. Peffer has given up many of the labors of his earlier years, but he is by no means inactive, and his small fruit plantation shows excellent care. In years past, he has been an enthusiastic fruit grower and experimenter. He is the originator of the Pewaukee apple, and has a number of promising seedlings now fruiting upon his grounds. The Pewaukee he regards as the best winter apple for Wisconsin, and has great confidence in its future. The principal objection to this fruit is its tendency to drop its fruit, and in Illinois this would be sufficient to condemn it for general planting.

Among the new varieties that Mr. Peffer thinks worthy of trial is Newton, a seedling of his own raising; season, late winter.

Clark's Orange, an upright grower, full of fruit at the time of our visit; season, February.

Pfeffer's No. 20, which we saw in nursery row laden with fruit. Early winter.

Peffer's No. 3 pear is a seedling of Flemish Beauty which it greatly resembles in appearance of fruit. The tree has never blighted and is a great bearer. Excellent for canning.

The original tree of Gibb's Crab still stood in nursery row. The variety was selected by Mr. Gibbs from a large number of seedlings for its quality. It ripens late in the season and is said to be very superior for cider and for canning; with a few peaches to flavor, cannot be told from that fruit.

Digressing for a moment from fruits we examined Mr. Peffer's silo which may interest some of our members. The silo is twelve by sixteen feet on the bottom and sixteen feet deep, and is slightly larger on top than at the bottom, each side having a slight inclination of two inches from top to bottom. When the material with which the silo is filled settles it tightens and more perfectly excludes the air on sides and corners. The corn fodder is put in whole, alternating the ends of each layer and every two feet in depth the position is changed to right angles to the layer below.

Of raspberries he considers the Nehami to be superior to the Gregg.

Newman's thornless blackberry he considers of value. There was certainly an excellent crop of fruit on the canes, but they

trailed badly on the ground, and this would necessitate mulching to keep fruit off the ground.

On the following morning we took the train for Madison to visit the experiment station of the Wisconsin University. This city is nearly surrounded by two large lakes several miles in extent, and on the day of our visit was surely cool enough for a summer resort. At the University we met Prof. Goff whom some will remember as having attended our state meeting at Champaign a few years since. In his company we visited the experiment grounds. These are small in extent as yet, and as the orchard set a number of years since for experimenting with the newer sorts has been cut down, there was not much of interest to record in this paper.

In the evening we continued our journey till we reached Baraboo, some fifty miles to the northward. Mr. A. G. Tuttle's nursery is located here, and Mr. Tuttle is also widely known as an experimenter with the famous Russian apples, from which so much is expected by many. Mr. Tuttle called for us in the early morning and we went out to his place about a mile distant. Here we saw very much to interest us and more than we could well digest in the short space of one day. We wish to say right here that Mr. Tuttle, who has reached an advanced age, is deserving of all credit for the experiments he has undertaken and the system with which the work has been done. On his place is an orchard originally set with Duchess and Utter's red apples, of which the former only remains, the Utter having been winter killed some years since. Where this orchard stands the ground is very rich. The Duchess in some instances showed signs of injury, but were laden with fruit. In another orchard were some eighty varieties of Russian apples, many of them in fruit, two trees or more of a kind. We first visited the blackberry plantation, the fruit of which they were now busy gathering. He estimated the crop at 10,000 quarts to the acre. It was certainly immense in quantity and excellent in quality. The variety was Ancient Briton, which he regards as far ahead of the Snyder and Stone's Hardy, both of which were growing upon his grounds. His system is to give best of cultivation and cover plants in winter. This latter is done by digging a trench on one side, bending the plant over with a fork, throwing on a few shovels of dirt to hold the plant down and covering with a light litter of some kind.

Mr. Tuttle has discarded what is known as the common variety of Duchess apples, claiming that other varieties of the Duchess family are superior in many respects. However, no one will know that they have another variety than the common Duchess, as the fruit in appearance is identical. By the way, there are several members of this family under different names, and if you order any of them you will never know but what you

have the Simon pure Duchess. They are Annisette, Arabian, Glass Green and White Krim. Mr. Tuttle has tested them all, and has selected the best, which he is now propagating in his nursery and disseminating.

The White Transparent (or Yellow, which is the same) is an apple of good size and a handsome fruit. I understand Mr. Patterson, of Missouri, has several hundred trees of this variety in his orchard. The season is summer, and while it is no doubt of value, I should set it sparingly for market. In a family orchard it will no doubt prove desirable.

Early Champagne Mr. Tuttle speaks of in high terms. The fruit is not large, and would regard its value to consist in its extreme earliness.

Hibernal, he claims, is a better bearer than Duchess and a better cooking apple. The fruit is large, and season early winter. Very hardy and free from blight.

Longfield is very hardy, and Mr. Tuttle thinks will take the place in Wisconsin of the Snow, as it is about the same season.

Red Wine is a very handsome summer apple, of medium size, and presents a beautiful appearance on the tree. Worthy a place, on account of its beauty in an amateur orchard. Good for market.

Juicy White, summer, has borne eight successive crops of fruit. Quality, cooking.

Borsdorf, late winter. Generally free of blight. Fruit rather small, similar to Gilpin. Quality, fair

Enormous, he thinks, will take the place of Fall Pippin.

Romensko. Large size. Winter. Only fair bearer.

Winter Oporto. Large, not a prolific bearer. Fruit clings well to the tree.

Beautiful Arcade is a sweet apple, of good size. Season, summer. Good bearer. Said to be the best sweet apple of that season of the year.

Charlamoff, a full bearer.

The Annis family of Russian apples are all small and of value only for northern Minnesota and Wisconsin. Would be of no value here.

Of the old varieties, the early Joe is regarded highly by Mr. Tuttle.

I was surprised to see so many fine appearing apples among the Russian varieties, and to note what prolific bearers some of them are, but was also disappointed to see so many varieties subject to blight and so poor in quality of fruit. The Alexander family were especially subject to blight. In the notes made as to quality of tree, etc., that could not be observed at the time. The opinions expressed are those of Mr. Tuttle.

Most of the varieties were summer and fall, and the winter

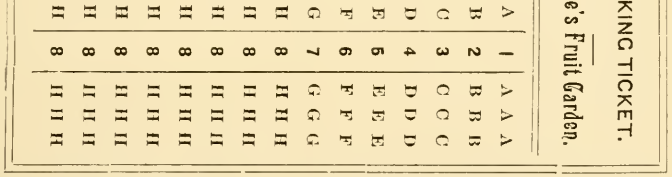
apples would be of no special advantage to this locality. These so-called fall and winter varieties of northern Wisconsin become summer and fall apples when brought this far south. I saw nothing equal to the Minkler or Roman Stem among the Russians for an all around winter apple for Illinois.

For early summer the White (Yellow) Transparent, Early Champagne and Red Wine may prove of value to us, but in the autumn and winter lists a number of the old standard sorts are far ahead of any Russians I saw for Illinois. For those who wish to test some of the most promising varieties, those above mentioned are the best in our opinion; no notes having been taken of those whose appearance condemned them as unworthy of trial.

Mr. Tuttle, who believes firmly in the future of the Russians for northern latitude, expressed the opinion that probably for central Iowa and Illinois there were varieties among the native sorts that would prove of more value than the Russians.

The Hibernal resembles somewhat the Minkler in growth of tree, but the Hibernal is hardy as iron, and would, in my opinion, be a splendid stock on which to top work our semi-hardy varieties. I desire to call the attention of those of our members, who are using the crab stock for this purpose, to this variety. The crabs do well for the nursery, but are of too slow growth in the orchard on which to top work our strong growing varieties.

A little device that interested me was a picking box or form into which the berry box was placed while being filled with blackberries or raspberries, by the picker. The box was made of tin of a suitable size to receive the quart box; the box has a hinged cover with a funnel shaped hole through which the fruit is dropped into the berry box within. There is a slot on one side for the strap which goes around the picker's waist. This box prevents waste in picking fruit, and the box being held by a strap both hands are left free to gather the fruit. Mr. Tuttle has also a very sensible picking ticket which is hereto attached. The letters A A A are for one quart, B B B for two quarts, and so on up to eight quarts for the letter H H H.



The Lucretia Dewberry that we saw in fruit was very fine in appearance and very poor in quality.

From Baraboo our trip took us westward across the state to La-Crosse, on the Mississippi river. Mr. Harris, of LaCrescent, Minn., came over the river in the morning and escorted us to the fruit farm of Mr. Wilcox, just outside the city. Mr. Wilcox's fruit farm is situated in between two hills and extends up the sides of same with opening to the westward. He has used the crab stock largely for top working purposes, but has abandoned them owing to poor success. Here we saw McMahon's White again in excellent condition and of good size. He thinks very highly of it. The orchard is on a side hill. The Duchess here were very fine. Whitney No. 20 in fine condition. Early Champagne he regards with much favor. Here we saw a new seedling apple which in fruit and tree seems to promise something more than usual for the fruit growers of the north, and possibly for Illinois. The tree bears well and the fruit keeps well through the winter. It is called Wilcox's Seedling and as yet is not on the market. The Pride of Minneapolis crab, would think desirable as a cider crab.

Of numerous plums the Cheeny, DeSoto and Rolling Stone were laden with fruit, and according to Mr. Harris are the three best varieties grown, the Miner being far behind these in bearing qualities. From here we went across the river to LaCrescent and visited the fruit farm of Mr. Harris, for many years past identified with the Minnesota State Society of which he has been President. Here we saw much to interest us, but as his trees were not in bearing this season the fruit we did not see. He has many new varieties in the nursery and orchard which will be heard from as they come into bearing, through the Horticultural press, to which Mr. Harris is a liberal contributor.

Leaving here Saturday evening we arrived in Minneapolis Sunday morning, where we spent the day, being called upon by Mr. Hilliard, Secretary of the Minnesota Society.

Monday, Mr. Wyman Elliott, President of the State Horticultural Society, called with his carriage and drove out to the State University buildings and experiment grounds. The agricultural department of the University is separate from the main University buildings, being about two miles distant, and is run in connection with the experiment station work. There are some forty students taking the Agricultural and Horticultural courses of study, and this idea of carrying forward the work of this department separate from the University proper, is becoming very popular among the farmers of that state. On the experiment grounds, which are quite extensive compared with those of Wisconsin, we found many new varieties of fruit trees and plants, but none in fruit, most of them being too young to bear. In all probability many new items of interest will come out of the work they are so energetically carrying forward, but no items were found of inter-

est to us for record now. The Weaver Plum we saw in full fruitage, mainly free from the curculio's work, due no doubt to spraying with arsenical poisons.

On Tuesday, in company with Mr. Elliott, Mr. Harris and Colonel Stephens, we took the train out to Lake Minnetonka, where we visited the fruit farm and experimental orchards of Peter M. Gideon, the originator of the Wealthy apple. Here we saw peach trees in the perfection of foliage and growth, bearing fine specimens of fruit, and trees twelve feet in height. This is accomplished by laying the tree down and covering during winter with hay or fodder. Wood ashes are used about the roots to keep off the borers. Claimed to have eighty varieties of peaches growing on the place. Mr. Gideon said the three best apples for the north were the Wealthy, Peter and Excelsior, varieties originated by himself.

In the early settlement of the country Col. Stephens, who was one of our party, had discovered an unknown variety of tree on a point near the upper end of the lake, which was in early days used for manufacturing purposes. A section of this manufactured wood was sent to Mr. Barney, of Dayton, Ohio, who pronounced it Catalpa. Col. Stephens had been told that an occasional stump and young tree could still be found there. It has often been questioned whether the Catalpa is ever found in so high a latitude, and the Colonel desired our opinion as to its genuineness. But the appearance of the country has so changed that he found it impossible to locate the spot.

Every fruit farm in Minnesota, judging from the ones we visited, has resolved itself into an experiment station full of interrogation points, and they are bound to find fruit for their part of the country, if research and effort count for anything, Mr. Gideon has many hundred seedlings set out in orchard for testing.

Thus you see that others are worse off than ourselves, and we have much to be thankful for, after all, but at the same time our efforts to secure a better winter apple for Illinois should be carried forward with vigor.

These notes have spun out much longer than we intended, but much has been omitted. The conclusion to be drawn from them is obvious—that the field is still open for that new apple that has the quality of the Jonathan, the hardiness of the Duchess, and the bearing qualities of the Ben Davis.

In passing over the Chicago, Milwaukee & St. Paul Railway, we were pleased to see the depots, new and tasty buildings, erected to please the eye as well as for comfort, and the grounds planted with trees, flowers and foliage plants. An example we hope all our railroads will soon follow. The smooth track,

luxurious cars and accommodating service, in connection with the splendid farms, handsome houses, immense barns and beautiful lakes that are constantly presenting themselves, makes the journey a constant delight.

DISCUSSION.

Mr. Gaston—We have cultivated the Salome apple and my expectations are fully met with it. I have them here on exhibition. Its quality is good, and the tree hardy; it is a long keeper. Then we have the Hennepin, which is supposed to have been pollenized by the Ben Davis. The Hennepin is a great bearer, long keeper and rapid grower.

Mr. Shank—I have an apple that I want to present. It is extensively grown in Schuyler County under the name of Bentley Sweeting. It has been kept two years. It is a vigorous bearer, hardy, well-shouldered, like the Early Harvest. I am growing quite a number of them, and one can get them in Schuyler County. I tried some new varieties last spring, and among them was the Salome. I lost three out of the five that I put out.

Mr. President—So far as some apples are concerned, they are very hard to get to grow when taken from the nursery, but when they are once established, they are all right. I know that to be the case with the Willow Twig. That also might be the case with the Salome. My experience has been that we are as apt to get the apple we want here in Illinois as any where.

Mr. Shank—I do not believe that an apple will ever be produced that will be a success over a radius of one hundred miles in this country. One locality may find what is adapted to its peculiarities, but in another locality it will fail.

Col. Brackett—The idea of locality is necessary to be considered. The idea of going to Russia or any other foreign country for an apple, is absurd. It is assuming that the soil and other conditions of environment are similar to ours. It is very important to consider the question of adaptability.

REPORT OF E. A. RIEHL, DELEGATE TO THE MISSOURI STATE HORTICULTURAL SOCIETY.

Mr. President:

According to instructions, I left home on Monday evening, Dec. 2d, and laid over in St. Louis until the next morning so as to have a daylight trip and see the country through which we passed. From St. Louis, west to Pacific, the land is rolling and fertile, much of it laid out in lots for suburban residence purposes. For some distance from Pacific the road passes through the rich valley of the Merrimac, containing fine farms. Before reaching and after crossing the Gasconade river the country becomes rocky and rough, the prevailing timber being post-oak and black-jack, no pine is seen anywhere on the line this side of Lebanon.

Shortly before reaching Lebanon we came to a better soil, and when Lebanon was reached we were agreeably surprised. The town of about 2,500 inhabitants is situated on an elevated plateau having a dark soil like our prairies. The town is well built and looks prosperous. At the depot we found President Evans and the local reception committee, who received and conducted all comers to the homes of the citizens. Those who preferred to stay at the hotel found their bills paid by the citizens when they came to leave.

The first day was devoted to decorating the hall, placing the fruit in position and getting acquainted with each other. The meeting was opened the evening of the first day and, though held in the opera house, every seat was occupied, as was the case every evening of the session. The local attendance was better than at any Horticultural meeting I ever attended before. This was owing partly to the character of the people and the fact that the meeting had been well advertised, but I think mainly to the program. The Mendelssohn Society were on hand and gave chorusses, quartettes, double quartettes, vocal and instrumental solos, which were given between the papers read. Your representative was honored with the chairmanship of the committee that examined the fruits and awarded the premiums. The fruit shown was the finest I have ever seen, nearly all grown on the Ozark range, on new land and young trees. Several new seedling apples were shown, some of which promise to be valuable, especially a seedling of the Yellow Belleflower, grown at Lexington, Mo.

Also a pear shown by Mr. Mulinerodt, of St. Charles, that keeps longer than any other good pear we have.

As elsewhere, the Ben Davis is the apple par excellence for profit. There are a number of varieties that are promising, but

none are well enough tested to be recommended for extensive planting. The York Imperial is a fine apple, much liked by growers and dealers, but objection is made to its habit of growth, which is very upright.

The Mamoth Black twig and Arkansas Black are identical, and the impression seems to prevail that it is not very desirable.

The W. W. Pearmain does remarkably well in some localities, and some growers are making it their main variety instead of the Ben Davis.

There were shown some apples from southern New Mexico, grown on the high table-lands, that were fairer and freer from insect marks than any I have ever seen before. In appearance and coloring they resembled wax specimens.

The small fruit interest is much larger in southwest Missouri than we have any idea of. The growers have just formed a Shippers' Association, and claim to have 900 acres of strawberries for next season's fruiting. As with us, the different growers prefer different varieties. The Crescent, however, is in the lead. Capt. Jack, Downing, Sucker State, Haverland, Bubach and Warfield are favorites with many. The Jessie seems to be very variable, praised by some and condemned by others.

Peaches are being largely planted, but as yet catching the curculio has not entered into their calculation. When asked what they proposed to do with the curculio, they said they proposed to plant enough for the curculio and themselves, forgetting that the curculio, like all other creatures, will increase in proportion as its food is increased, and ere many years their peaches will be as wormy as any, unless they start to war on this pest of stone fruits. They head their trees low, two or three feet from the ground, and on these cannot well use a catcher. Perhaps by the time they find out that they must do something against the curculio, they may have found a way to successfully poison him without injury to the trees. Their country and orchards are new and their fruits comparatively free from insect depredations, but they have the insects with them, as I know, and it is only a question of time when they will have as many insects as we and must fight the insects to have good fruit. But they have a good fruit country, a mild climate, and cheap lands, where a man can make a home with small means.

Their Society is well managed by the officers, who are all peculiarly well qualified for their various offices and work together harmoniously. The members have the good sense to annually re-elect them to the offices they fill so well.

Mr. Riehl—I questioned some of the members present at their meeting regarding the curculio and their method of treating that

pest. They said that they were not bothered with the curculio, but specimens I saw were clearly so affected. They claim to have 60,000 peach trees in one orchard in Howell county.

REPORT OF DELEGATE TO STATE HORTICULTURAL SOCIETY, INDIANA.

BY F. I. MANN, GILMAN.

This meeting was held in the elegant Horticultural rooms of the new capital building, at Indianapolis, where I arrived long enough before the first session to take a view of the fruit on exhibition, and become acquainted with Secretary Hobbs. While not so large a display as is usually made at our own meetings, or as frequently made at the Indiana meeting, the principal kinds were represented by some very fine plates. Some plates of apples from the banks of the Ohio river excelled any apples I had ever seen. A display of California fruits, sent the Society by its President attracted much attention. In this list was the sweet orange, navel orange, lemons, citron, dates, olives, and Japan persimmon.

We found the Society under a little temporary embarrassment from the absence of its President, Dr. Furnas, who has, during the past year, moved to California, but the members soon warmed up to the subject under discussion, and made the general discussion the feature of the meeting, which it seems was anticipated by the secretary from the small number of papers read at each session.

Mr. Ragan, who is well known in our Society, made a report on the Agricultural College of Purdue, in which he grieved over the small number of students taking horticultural courses. Prof. Troop, of the Experiment Station, made a report on the experimental testing of varieties, and his list of valuable trees for planting was very long.

Prof. Stockbridge, Director of Experiment Station, LaFayette, gave a paper on the changes in Quality and Composition of Fruits Through Applications to the Soil. After discussing the various chemical combinations and changes of plant life and fruit development, he gave the effects of the application of potash to the soil. His results showed that this application lessened the proportion between free acid and the sugar in fruit and hence improved the quality. Prof. Stockbridge also gave a report of the results of girdling grape vines on the appearance and quality of the fruit, and he thought girdling would prove of great benefit. The discussion following pretty well developed the fact that girdling would destroy the vine.

Prof. Ragan gave a paper discussing many features of horticulture—its progress and development, and some things which could be expected from it.

Mr. Sedgwick, of Richmond, gave his experience with grapes, and of many kinds placed the Niagara at the head. He does not cultivate, but mulches well and has excellent success.

I found the members of the Society a set of earnest and able fruit growers, proud of their state and their new State House, which by the way, is probably the best public building ever built for the money used. I was under many obligations for the cordiality and hospitality shown me.

DISCUSSION.

Mr. F. I. Mann—A gentleman told me that it was the experience in California that the thing needed for the codling moth was to find a parasite for it. He thought that spraying did not amount to a difference in their fruitage of more than ten per cent. He said they had sent to Australia and got a parasite for the scale insect, and they were looking for one for the codling moth.

Mr. Vandenberg—I would like to ask what is the best spraying apparatus?

Mr. Gay—First, last, and all the time, thorough cultivation of the ground and picking up the decayed fruit is the best protection against the pests. Orchards should be cultivated all the time.

Mr. Patterson—I am sorry to disagree with the gentleman. I have picked up thousands of apples which had fallen, and I have my first codling moth to find on such apples, so I think it is useless to turn in the hogs; they would not eat any worms, if they did eat the apples. I spray my trees with a coarse spray, large drops, and I spray with Paris Green at the rate of seven ounces to a fifty-four-gallon barrel of water, which is below some of the recommended forms. I shall try the spraying again, but I shall be careful. I have a finer spraying machine now, and I shall put it on more diluted, if I get courage to put it on at all. I have tried the paper bonnets, and I have caught ten to fifteen thousand moths each year. I make the caps of newspaper and tie them on with soft twine; I thought I must do that

to save the crop, but for some reason or other I had more wormy apples than my neighbors.

STREET AND ORNAMENTAL TREE PLANTING.

BY A. DUNNING, DUNNING.

Mr. President, Ladies and Gentlemen:

The subject that has been assigned to me, Street and Ornamental Planting, is one worthy of a more fluent pen than mine. It is a subject that could be enlarged upon sufficient to constitute a volume; but I assure you I will be very short and try to come directly to the point in the endeavor to give some of my ideas on the subject.

I will divide it into four sections: First, *What to plant;* Second, *Where to plant;* Third, *How to plant;* and Fourth, the *After care.*

What to plant depends very much on the circumstances and adaptability in reference to soil and the effect sought to be obtained.

For street planting, there is nothing better than elm, ash, linden, and catalpa. In some parts of the State where the soil is dry, the hard maple I would class among the best; but, about Chicago on our wet, black soil, it is about the poorest tree we can plant. As to the lawn and grounds, I would increase the list of varieties in proportion to the size of grounds. If there is room plant even some of those not generally classed as hardy, and give them a little protection during the winter, for a few years, and you will be amply rewarded for the trouble in producing an effect, that can only be attained by having a large variety.

Where to plant is a subject that has puzzled a good many. For street and sub-division planting, I would plant a double row. On streets of sixty-six feet width, I would place the outside row eight feet from the lot line, in the street, and the inside two feet inside, on the lot. Twenty-five feet apart is about the right distance to plant. I would alternate the outside row with elm and ash, and set linden and catalpa in the inside row opposite the spaces on the outside. Of course this may be varied according to the taste or the circumstances surrounding, but I like the effect of planting different trees in rotation; it does not produce the sameness that is obtained by planting one variety. For the country I would not advise close planting on the streets, as it has a tendency to make bad roads. Nevertheless plant just the same and plant largely too. Place the trees in clumps and groups in the corners of the fields; and, if you will plant a cluster at every forty acre corner, it will serve to mark the boundaries, besides breaking the wearisome monotony of our vast prairies.

When it comes to planting your lawns and grounds, above all things avoid rows. Plant singly and in clusters; if you are not an expert, a good way to get at this—if you intend to plant in the spring—is to commence now. Get a bundle of stakes five or six feet long, lath will do. Set them in clusters as you propose to plant your trees. Place them so as to hide unsightly objects, and yet leave a clear view of points beyond, that may be desirable. Then from time to time view them from various standpoints, a window or other place of advantage, and change location as you find they hide something you wish to be seen from a salient point, or leave exposed a view you wish to shield. I venture to say that between now and the time for planting you will get them very well arranged.

How to plant. In the first place do not be afraid of getting the holes too large for the trees. Take a little more time and have at least three or four inches of space all around to spare, especially if it is in sod or hard ground. Cut away broken parts and smooth the ends of the roots with a sharp knife, or shears. If the ground is dry throw in a pailfull or two of water for each tree, when it is half filled with loose soil. In the case of large trees where there is a mass of roots and consequently many cavities, water is the best thing to wash the soil down among the roots and make it compact; a very desirable object to attain. Do not plant to exceed two inches deeper than the tree originally stood. When you have filled up well around your tree, tramp it and tramp it hard. The better the soil is firmed around the tree, the surer its growth.

Now as to fourthly and lastly or *After care*: This is an important matter and one that is shamefully neglected all over the country, from the man who plants an additional shrub in his yard, to the pioneer on our Western borders, who is trying to perfect a tree claim. How often do we find a tree set and then left to struggle for itself with weeds and grass, in connection with drought, severe heat and cold. Where it is possible, keep your ground well cultivated, keep the weeds down and the surface of the ground well stirred, and you will not lose many trees, if they were well planted, and you will get double the growth you would otherwise get. Where cultivation is not desirable, mulching cannot be over estimated. Use almost anything from coarse manure to old straw, or even weeds; in fact I am not sure but grass and weeds are the cheapest, most convenient and just as good, if the mulching is only done in time. Take your scythe in June and mow all the weeds along the roadside, and place them around your trees, and you will find you have "killed two birds with one stone," in that you have prevented the weeds from going to seed, have secured an increased growth of your trees, and in many cases have *saved their lives.* There is another advantage in this, and that is the tidiness and better appearance your roadside will present.

Another thing that is of great advantage to trees, that are set in sod, is to loosen the soil around them with a forked spade in the spring, for a few years after planting. Some twelve or fifteen years ago, one day in April, some of our men got out of work and we set them with forked spades, on a sub-division loosening the soil around the trees. They went over about half of it, and the effect has been marked ever since. You can see the exact place to-day, where they left off. When it comes to the tender varieties, and in fact all large trees, it will be found that a straw or hay band wound around the bodies will be a great protection. It will protect the sun-scalds we so often see on the south sides of the trees, in summer, and from the constant freezing and thawing in winter, so injurious. The way to get at this is to go to a hay or straw stack, and wind your bands into convenient lengths, say twenty or thirty feet, then roll them up into balls and they will be convenient to pass around the trees. Try it once and you will find it is not so tedious a job as one would suppose. Or again:

These straw bands are easily made with a simple crank with hook on the end that will turn easily in the hands. Throw down the hay or straw—if tramped by horses so much the better. Moisten it, and taking a wisp on the hook begin twisting while an assistant pays out the straw evenly, walking backward as you twist until enough for a good ball is formed. Then the assistant separating the band from the loose straw commences to wind the ball until the crank is reached where the end may be fastened until wanted with a wooden pin thrust through the ball.

DISCUSSION.

Mr. H. D. Brown—Have you had any experience in planting trees on streets in a town like this? I have sold trees for planting all over this town, and there has been little success with them.

Mr. Dunning—Pains must be taken with each individual tree.

Mr. Vandenberg—I will say that you should not be afraid to use the pounder, unless the ground is very wet. I have set thousands of trees on streets in St. Louis and seldom lose any of the trees. If it is properly planted and pounded and mulched, it will need almost nothing afterward. Plant solid.

Mr. M'Cleur—We set out trees two inches through, and have a man get down on his hands and knees and work the dirt in among the roots. The ordinary way of throwing it in and tramping it, does not get the dirt among the roots and be in contact with them before they can grow well. I have not much faith in

pouring in water, as some do. If the ground is dry, and you pour in water, most of it will go into the soil; and there is also danger of starting too much of a growth. If the dirt is packed firm it will do better. With many trees, especially the hard maple, we wash the trees with some strong alkali—say concentrated lye to keep out borers. It is cheap and can be put on frequently. Elms should be treated in the same way. I would not advise planting maple but some want it.

Mr. Dunning—Speaking about working in the dirt, that is well enough, but after that is done, I think a pail of water will finish packing in the dirt better than it can be done in any other way.

Dr. Lyons, Hamilton—I have adopted evergreens as ornamental trees. I planted with care, and lost hundreds of trees. Yet I thought things were done in the best manner possible, but that won't save the evergreens from dying. All the water and all the care in the world will not preserve evergreens if you once let the dirt dry on the roots. The outside moisture on the roots must not be allowed to dry, if you want the tree to live. There is a resinous substance on the outside of the roots, and if the roots once become dry, water can never penetrate that resinous covering, and the plant cannot but die. There is not a tree on my place that I don't prune every year. I have a pair of long shears, and in some cases I climb the trees. I sent to the State of Maine before I got an Arbor Vitæ that would grow.

Mr. Pearson—The gentleman evidently understands the mystery of planting evergreens. As he tells you, if the roots dry, they will never live. There has been through the West almost a furor for planting evergreens. They are planted because they are rare. But from my observation and experience I want to say that we have not an imported evergreen that has proved itself worthy of planting to stand more than twenty years. The Norway Spruce which has been at the head of the list, ninety-nine out of every one hundred of them when they are twenty-five feet high are a nuisance, if not taken care of. I have some that are thirty years old and they are worrying me. I know that I must keep the tops, the upper limbs, trimmed, shorter than the lower ones or else the tree will be full of holes. I would advise to set out what we have near us, though we have nothing native with us except the little

red cedars which the birds have set out for us. We need not go to Europe for Norways or Scotch pines. I don't belive there is a member here who wants to plant Scotch pines. The Austrian pines hold on a little longer, but they don't look well. We have a tree that grows in the swamps in this country, and all through New England. It is the prettiest thing that ever grew, and I think that when once established it don't require as much care as the pines, and that is the Hemlock. Down at Jefferson Barracks, the Government has had them out for many years, and the officers have taken a fancy to them and they are, some of them, thirty feet high and are simply magnificent. There is no prettier thing in the way of a tree, but they are hard to make live. The White Pine if planted in groups of about a half dozen makes beautiful groups. They keep their color better than the Austrian and Scotch. Pruning evergreens seems to have various effects on them. A friend of mine showed me a Norway that was about the only nice tree he had. I said that the cause of that was his keeping it pruned, but I found afterward that the tree had died from the effects of the pruning. We know that where evergreens are pruned a whole bunch of shoots start out, and that makes the limbs thicker, and I have known that to kill the trees.

Mr. Jackson—I do not find any difficulty in putting out Hemlocks. I have not lost more than one in fifty.

Mr. H. D. Brown—I am glad to see the Hemlock championed. I have Hemlocks twenty-five years old, and I don't allow any man to trim them.

Dr. Humphrey—If I have a hobby, it is in setting plants and trees. I have set five hundred plants and not lost one. I water them even if it is raining. I invariably put water in the place of planting. If I have the ground just right, I water once and only once. If the ground is a little dry, I put in a pail of water and then let it stand a little while, then put in another pail of water. I put out the tree and make the ground firm towards the top. I never pound the roots but pound the ground near the top. Some years ago I set out ten Willow Twigs, and the roots were dry and I put two pails of water with each tree, and I have picked seventeen crops from those trees, and I have never lost one of them. In regard to planting evergreens, I never expose their roots to the air.

President Dunlap—As to planting trees by the roadsides, I think they should not be put on the east and south, but on the north and west. Our soil will not bear much shading, so we should not put them on the south, if we want good roads; and then we don't need shade in the forenoon, and therefore the east side does not require trees. Then in hot afternoons it is pleasant to have shade trees on the west, and on the north is not objectionable.

Mr. Pearson—In some of the old countries they consider it quite an art to make what they call "Pollards" of the trees. They cut out the top and make the head closer. I have read of Pollard Oaks in England three hundred or four hundred years old. In Central Park, New York, are some beautiful trees, some with beautiful round heads that at a little distance one would not recognize the tree at all, and yet they are nothing but a common willow. Such trees trimmed with a round head are ornamental and are not readily injured by storms. That way of treating trees is also common with Lombardy Poplars which is a poor tree. They cut them back and make a tree with trunk three feet in diameter, but the head will be close and thick.

TUESDAY EVENING.

YOUNG PEOPLE ON THE FARM.

BY MISS LUCY BRYANT, PRINCETON.

Farming to-day, with its improved machinery of all kinds for lightening labor, is not what it was when our parents and grandparents were young. Work that was heavy drudgery then, requiring much time and patience, is now accomplished with ease and rapidity.

Owing to these many improvements, the young people of to-day have much more leisure for social enjoyments and pleasures than those of half a century ago. However, I am sure we do not enjoy ourselves more than they did, and perhaps do not appreciate our privileges as we ought.

To my mind there has always been a nameless charm connected with the stories told by our grandparents of the good old days gone by, when "apple-parings," "husking bees" and merry-makings of a similar kind were enjoyed by young and old, and a

certain warmth and heartiness which then prevailed is missing from the social gatherings with which we are familiar.

It has been said that the young people of to-day are more inclined to cultivate their heels than their heads. My dear friends, let not this be said of us. The long winter evenings on the farm give much time for study and reading and for improvement in all ways. See to it that we do not let this time pass in idleness, without making some effort to better our mental and moral character.

None of us would care to be called "a drone in the hive," and we must improve our youth—it will not stay.

Good literature can now be bought so cheaply that the poorest of us have no excuse for being without good books. Many farmers' boys and girls are obliged to leave school before they have acquired as high an education as they desire, and much can be done to perfect themselves in their studies by spending a part of their evenings, at least, with their books.

While there is much hard work on a farm and many young people sigh for release from such a hum-drum life, and long for the bustle and activity of a great city, they must remember that there is no trade or employment that can be made successful without persistent, steady effort, and there is no royal road to money-making without hard toil, both with hand and brain.

Agricultural pursuits are seldom overcrowded and the inducements to young men to remain on the farm to continue in this line of business, become greater and greater with the improvements in farming methods.

It seems to me that each one should have some special aim in life, should try to find out and cultivate what seems to be their "one talent," whatever that may be. Of course, if one has no liking for farm life or work he had better choose something else more suited to his taste, and then do all in his power to make a success of the chosen work.

Boys and girls! do not be too anxious to leave the farm, thinking it the worst place there is. Many have left home dazzled by the glamour and bright prospects their imagination pictured, but were doomed to bitter disappointment and failure.

Commercial and professional classes are now so overcrowded that success in them has become quite uncertain. Many who are engaged in clerking and similar occupations, hold positions for years on a meagre salary, in situations which have become burdensome to them, simply because they are unable to find others.

Of course it rests with our parents, in a great measure, whether our homes are made attractive or not. In the humblest homes order, thrift and cheerfulness may abound, and where these are found contentment is seldom missing. Who of us having spent all of our life in the country would willingly exchange our home

for the heated, noisy city; could we realize, even in a small degree, the greatness of the change?

There is no life so happy, free and independent, as that on a farm, and let us hope that agricultural pursuits may hold a prominent and attractive place in the eyes of the youth of to-day, who are choosing their life work.

THE FLOWERS OF NATIONS.

BY MISS MARY MORRICE, HAMILTON.

Flowers, as symbols and emblems, have played an important part in the world's history. In studying history we seldom read of a country or nation but had its favorite flower. They have for ages been used as types and emblems of affection, loyalty, and the different traits of human character. Thus we find nations adopting the favorite flower of their greatest monarch, as their national flower, simply because of their love and admiration for him; or political parties adopting a flower that their leader wears, as their badge.

The lotus, a kind of water lily, was the symbolic plant of Egypt. The waters of the Nile and adjacent rivulets were covered with these beautiful flowers. The lotus was used by the Egyptians at feast and funeral. Many of the Egyptian mummies are found with those flowers in their hands and on their heads. At the feasts of the aristocrats, jewels carved in imitation of the lotus were presented to the guests, and at the tables of the middle and lower classes wreathes of the flower were placed on the guests' heads. Pillars of houses, furniture, jewels, and the prows of ships were carved in imitation of "our beautiful rose," as the Egyptians called it. The sweet-scented heliotrope was also a favorite with the Egyptians for many centuries.

The Romans dedicated flowers to all their gods, and it is from them that many of our flowers received the meaning that is now attached to them. With the Romans the lily was the emblem of purity, the oak of power, the myrtle and rose of love, the olive and violet of learning, and the grape leaf of festivity. Thus we find Athens, the ancient seat of learning, has the violet for its national emblem.

The lily was the sacred flower of the Jews. Solomon had them carved on his temple, and they are mentioned in the Bible and other sacred books very often. The gorgeous sunflower was the sacred flower in Peru. The Peruvians worshipped the sun, and they considered the sunflower as typical of their god. At the feast of the Incas the Virgins of the sun wore wreathes of the flower on their heads, and golden sunflowers fastened their flowing white robes.

The royal ensignia of Japan is the chrysanthemum. You see them on the Mikado's state papers, carriages and flags; also on the soldiers' caps and uniforms, but the flower of the people is the blossoms of the cherry tree. In Japan the people call a picnic going to see the flowers, and in June they go to the woods to see "the snow that does not fall from the skies."

The national emblem of Germany is the blue cornflower. The German's great King Frederick was a man of very simple tastes. He showed this very plainly in his choice of a favorite flower. He preferred the simple cornflower to the loveliest flower ever grown. While walking in the country one day, a little peasant child, not knowing who he was, stepped up to him and gave him a bunch of cornflowers. The king was delighted; he thanked the child warmly and slipped a gold coin into his hand. The flower of France is the Fluer-de-lis, or flower of the iris. It is a pretty flower and the Gauls were and are very proud of it. The idea of the iris as a national flower was obtained from the tomb of a powerful Gallic or French chief, who had in his day kept the hated Saxons out of his country. Louis VI had the standards and nobles' armor covered with the iris, but Charles VI reduced the number to three, the mystical church number. This has been the number used ever since.

The royal badge of England is the rose. It gave its name to the "war of the roses," in which by doing their best to exterminate each other, the nobles allowed the Tudors to slip into the throne and tyranize over them for several centuries. Then the white rose of York and the red rose of Lancaster gave way before the astutely designed party-colored rose of the Tudors.

The thistle of Scotland is a very ancient badge. There is nothing very pretty or remarkable about the thistle, but like the cornflower it has a decided tendency to spread, and one don't like to get too close to it. Its origin dates from the time the Danes invaded Scotland. The Scottish army had encamped on the side of a heather hill, the dames were on another hill not very far from them. They thought that they could easily surprise the Scotch. So they started off and creeping stealthily up the hillside were almost at the Scottish camp, when one of them stepped on a thistle. It was an entirely unexpected foe and he uttered a cry of pain. This roused the Scotch who fell upon them so savagely that they drove them out of the country. Hence the adoption of the thistle as a national flower or badge.

When St. Patrick went to Ireland to convert the people they gathered round him to hear what he had to say. He tried to give them an idea of the Holy Trinity, but seeing he had made no impression on them he picked up a clover leaf or shamrock, and proceeded to show them. He let the petal in the middle represent God, the one on the right Christ, and the one on the left the

Holy Spirit. They understood him and ever after regarded the shamrock as a sacred leaf.

In olden times Wales was a sort of independent kingdom. The Saxons were always trying to conquer it, and, after many failures, finally did succeed. In one of their battles the Welch took up their position in a leek field. Their leader, St. David, ordered each of the men to put a leek in his cap, to distinguish them in the fight. The Welch won the battle, and somehow thought the leeks had something to do with it. The Welchmen always wore them on St. David's day, in commemoration of the battle, and finally adopted them as a national badge.

These flowers, some of them pretty, some otherwise, represent but very little to us. Indeed, some of them seem inappropriate and uncouth. But to the nations who wear them so proudly, they represent some chivalric deed of their fore-fathers; some victory, perhaps, which freed their country from cruel invaders, and are thus made inexpressively dear to their hearts.

This country has not yet decided as to what will be its national emblem, but let us hope that it will soon decide on some flower, or flowers, which will not only be appropriate, but one which the future sons and daughters of this country will be proud to wear.

A REMARKABLE SEEDLING PEAR.

BY JAMES W. JONES, LINCOLN.

The subject allotted me, I am sorry to say, cannot, by my inexperience, receive the attention it should have, as this is my first attendance at your meetings; but I shall try and give you the history of one of the most remarkable seedling pears of the day.

In the early fall of 1834, Mrs. Maria Fleming, with her husband, came from the State of Ohio to the State of Illinois, settling in what is now Corwin Township, County of Logan, some seven miles west of Lincoln, and brought with her the seed of one pear, which, after getting settled in their new home, she planted in a tea cup. She raised a puncheon in the floor, and placed the cup beneath it, there to stay until spring, when the cup, with its future wonder, was brought to view, and the three seeds were transplanted from their former place to Mother Earth, there to come forth, in due time, to be not only the wonder, but the delight, of all who see them. From the three seeds there were grown three pear trees, of which two proved to be very good pears, somewhat small, but very sweet. The third tree (the subject of our talk) proved to be the most profitable of the three, the fruit being larger and of a better quality, the tree a more vigorous grower, as time has proven, the hardiest of any pear tree in our knowledge.

We shall christen our subject, "The Lincoln Pear," and by our former statement, you will see that the parent tree is fifty-four years old. It has always been free from that great enemy to our most promising pear trees—blight. It is one of the most beautiful and symmetrical growers, can always be distinguished by its uniform heading, and as to its bearing qualities, we claim for it that its equal has yet to be discovered.

My father has a tree (a sucker from the parent tree) that is thirty-six years old, to which we have living witnesses that it has borne fruit for thirty consecutive years, and in 1888 we are satisfied that this tree bore the enormous amount of fifty bushels, and the fruit was sought after by every person who had ever been familiar with it.

For quality, it has no superior, and hardly an equal—very rich and juicy. We also claim more essential points for this pear than can be accorded any other pear of to-day. We claim for it, extreme hardiness, that is a prolific bearer, free from blight, and in size and quality second to none.

Now, Mr. President, you may say that I am trying to boom the Lincoln Pear, but I am of the opinion that praise beyond true merit, dwarfs, if not kills, any subject, and I shall only add, that for the last thirty years the history of our country is not complete without the name of the lamented Lincoln, growing to manhood in almost obscurity, yet by an all-wise Creator, was, for his many noble qualities, brought forth to be not only the wonder, but a guiding star of this, the nineteenth century; and, just so, in time, will this remarkable seedling pear, for its many excellent qualities, win for itself admiration from all who may become acquainted with it.

ANTIQUITIES IN GRAIN AND FRUIT.

BY MISS EDITH GATES, HAMILTON.

In preparing the following essay I have been, to a considerable extent, a gleaner. Gathering information partly from works now out of print and some from books of more modern date.

It is hard to tell how long the art of rearing and developing plants has been practiced, but it has been for many years; still the origin or native place of many is unknown; for instance, grain has been so long in cultivation and has changed so under different circumstances, that it is difficult to trace it back far, but it is generally accepted that it was brought from India.

Maize, or Indian corn, was found in America when discovered. It is now cultivated in the south and east of Europe, but it is there known as Turkey corn, from it being supposed to have been introduced by the Mohammedans after their conquest of

Constantinople. In the early times in this country the chief product of the Indians was corn, and it has descended until the present time when it is still the chief farm product.

Rice is from Asia, and has formed the chief article of food of China and India for many years. It was raised in large quantities in Carolina before slavery was abolished. The cultivation of rice was the most unhealthful work in which the slaves were engaged. It needs a *very* moist soil, and at certain times of the year immense quantities of water were allowed to flow over the rice fields and remain several months. The water was then removed and the slaves were immediately set at work, sometimes ankle deep in mud, with their heads exposed to the hot rays of the sun, and it was not strange that many of them would soon succumb to this exposure.

Although grain has much to do with the food of the world, fruit is the most agreeable food known. The most important of our fruits were formerly the product of warmer countries, but by the art of cultivation they have become acclimated to temperate regions.

The Greeks and Romans introduced many important fruits into Italy from the many countries which they conquered. They also spread the peach, apple, plum, pear, cherry and many other fruits over Europe, and from Europe they have gradually been introduced into America. In the time of Elizabeth the cultivation of fruit advanced very rapidly. The Queen herself being very much interested in it, set a good example as a horticulturist, Also great advantage in the cultivation of fruit has been derived from the establishment of horticultural societies.

The peach is one of the beauties of nature. Its perfect shape, beautiful color and delicious taste rank it among the highest of our fruits. According to the earliest history that we find of the peach, it was a native of Persia. From Persia it was introduced into Egypt during a war between those two countries, but the Egyptians regarded it with distrust as they supposed the King of Persia had sent them to poison the inhabitants. It was introduced into Italy in the time of Claudius, and in England in 1550. Peaches are often cultivated in large quantities. In Montreuil, a village of France, almost the whole population were employed in growing peaches, which has maintained the inhabitants for ages. They were brought to America in 1680, and they have been one of the leading fruits in this country ever since.

The cherry was also introduced into Europe by the Romans, but they appear to be natives of most temperate regions in the northern hemisphere. It was a great favorite in England in the time of Henry VIII, when it was cultivated in immense orchards.

The orange is a very useful fruit, and although it is the product of countries much warmer than our own we are enabled by commerce to obtain it almost as cheaply as our own fruit. In some

countries where the climate is too severe, magnificent conservatories have been erected, and the orange is raised and cultivated the same as in its natural climate. The first orange tree was brought to England by Walter Raleigh. At Hampton Court there are some orange trees said to be 300 years old. These, and also some in Windsor, are kept in green houses in winter, and wheeled into the open air in summer.

Grapes have always been considered as one of the healthiest of fruits. Their earliest history is not known, but we do know that their cultivation dated back to Bible history. Bacchus who was imagined to have taught its use in making wine was elevated to the rank of a god. The vine that is now cultivated in Europe is said to grow wild on the banks of the Caspian Sea, and, according to some historians, the Northmen named the region where Rhode Island is, Vineland, because of the irfinding the grape vine in such now abundance.

Bananas were first known in Italy. They are now very common to a great belt of country in the Torrid Zone, in the New World, where many of the inhabitants use it as the chief article of food. They were at one time cultivated in England in hot houses, and were served at the banquet of Queen Victoria, being the rarest and most delicate dish served. The "plantain" is a rank growth of the banana. What is called a banana in the northern markets is simply "plantain." The banana is entirely too delicate a fruit to be shipped. The orange, also, has a rank growth, called "shadows" or "forbidden fruit." They are palatable, that is if a person likes Peruvian bark or quinine. They have been found one foot in diameter with skin four or five inches thick. When the skin is removed the fruit is found to be about the size of the common orange, but it is very bitter. This out-growth only applies to tropical regions, it never occurs in temperate countries.

Apples were brought from the east by the Romans. The small, wild crab was formerly the only species of apples, but it has improved under cultivation, until it has gained the perfection of the present time. Homer describes the apple as being the most precious fruit of his time.

As our country advances in cultivation, many of the heroes of the early times are lost sight of, but one which I think deserves being remembered is John Chapman, or, as he was familiarly known, Johnny Appleseed, from the fact of his having, from his early manhood, been a wanderer, spreading the apple seed over the wide extent of territory in the Ohio Valley. Part of the time he traveled with a horse and wagon. Once or twice he used a canoe, but a greater part of the time he went on foot, carrying the seed in immense leather bags. He got the seeds from cider presses in Pennsylvania, and he would travel day and night, planting seed as he went, and placing a rude enclosure around each planting spot. He continued in this way until his

death, which occurred in Ohio. From these nurseries sprung the beginning of the large apple orchards of Ohio and Indiana, which States were afterward among the foremost in apple culture in this country.

How happy must have been his life, always intent on making the wilderness fruitful, never thinking of his personal feelings or wants.

WEDNESDAY MORNING.

The house was called to order by the President, who invited the Rev. McArthur to offer prayer.

The President announced the awarding committees as follows:

Class 1, F. C. Johnson, Kishwauke.
Class 2, Frank Cadwell, Griggsville.
Class 3, P. E. Vandenberg, Jerseyville.
Class 4, Col. G. B. Brackett, Denmark, Ia.
Class 5, Charles Patterson, Kirksville, Mo.
Class 6, J. M. Pearson, Godfrey.
Class 7, Mrs. A. Bryant, Princeton.
Mrs. A. C. Hammond, Warsaw.
Mrs. H. M. Dunlap, Savoy.

Committee on Final Resolution. E. A. Riehl, C. W. Rowly.

The Secretary read the credentials of Mr. Henry Speer, Delegate from Missouri State Horticultural Society, Prof. W. H. Ragan from the Indiana Society, and Col. G. B. Brackett from the Iowa Society.

On motion, these gentlemen and Rev. McArthur, of Hamilton, were made honorary members of the Society.

Mr. Hay, of Jacksonville—I would like to know if the entire $1,000 appropriated for the experimental stations have been expended.

Secretary Hammond—No sir, only about $400.

Mr. Hay—Then I don't think we have the right sort of a committee. I don't believe in a committee that can't get away with $1,000 in a year. The next thing we know they will be running off to Canada with the surplus.

Mr. Gaston—I think it would be well to increase the number of the *Ad-interim* committee. I think the State work is suffering for want of more extensive and thorough organization.

PRESIDENT'S ANNUAL ADDRESS.

BY HENRY M. DUNLAP, SAVOY.

Once again we meet around the Horticultural Board to compare notes and talk over the events of the past year. It is well, perhaps, that our annual history should be made a matter of record, and, viewed in this light, it may have been wisely provided by the incorporators of our Society that the President should deliver an annual address; it might properly be styled the President's Message.

This Society, at its last annual meeting, requested the Executive Board to make some provision for the establishment of stations for experiments in horticulture. To do this in a manner to insure success and lasting benefits therefrom, the Executive Board decided that the means at hand were inadequate for the work. In view of this fact, and the necessity for extending the work in other directions, and the printing of more copies of the annual reports, the Board decided to ask the Legislature for an annual appropriation of $4,000 in place of $2,000, as heretofore received. Some of the officers went before the committees of both houses, and explained the object of the increased amount asked for, and the Legislature finally decided to grant the request, provided that the Society should expend not less than $1,000 annually in field experiments for the advancement of horticulture. For this increase in our funds, we are indebted to the many friends of horticulture in the Legislature, and to the individual efforts of members of this Society, with their representatives, but especially do we wish to thank those members of the Legislature who made it their personal business to see that we were successful, and among those it is but justice to acknowledge our obligations to Hon. O. F. Berry, of Carthage, who had charge of the bill in the Senate, and Col. Chas. Bogardus, of Ford County, also of the Senate, and the Hon. Wm. Oglevee, of Clinton, and Hon. D. R. Sparks, of Alton, who looked after our interests in the House. We owe much to these gentlemen for their efforts in our behalf.

To secure this appropriation was one thing, and to wisely expend it is another. The Executive Board immediately took the matter in hand, and decided to establish three experiment stations in each horticultural district of the State, making nine stations in all. Rules were adopted and experiments decided upon. As a report will be made upon this subject, I refer to it here so that you may be prepared to discuss this question, hav-

ing all the facts before you. It is for your interests that this money is to be expended, and while the final decision of the matter must be referred to the Executive Board, suggestions or requests will be in order, and I hope will be freely given. I trust every member will take an active interest in this subject. Of course some questions will take more than one year to settle, but if we start right, and spend this money judiciously, I have no fear but what future legislatures will continue the appropriation.

Just now the question of new hardy fruits, especially apples and pears, is an important one, and having the past season, in company with our Secretary, made an extended trip through Wisconsin and Minnesota to investigate the desirability of the Russian and other northern varieties of apples for Illinois, I feel constrained to say that the discovery of a hardy variety of winter apples for this State that will fulfill all the requirements, is much more likely to be discovered within the borders of our own great State than outside of it. It is possible that it exists here now. Many varieties of apples are not propagated outside of the neighborhood or farm of the originator, because no one has taken the trouble to introduce them. I know of a number of such instances and have heard of many more. In this connection would it not be a wise act for our Executive Board to appoint a committee on new fruits, whose duty it should be to visit the grounds of the originator of a new apple, and investigate its qualities, and if promising, secure trees or cions for our experiment stations and report upon them?

If it is also thought best to continue the investigation of Russian varieties of fruit, would it not be a good plan for the Societies of Illinois, Indiana, Wisconsin and Minnesota to petition congress to send a commission, composed of three horticulturists, to Russia to investigate and select the best varieties they could find for testing? The *number* of varieties has entered more largely into previous selections than *quality*. It is *quality* we want and this we should have.

The Horticultural Department of our State Fair is not a credit to the fruit interests of the State, and this is largely due to the faulty arrangement of the premiums and the small amount of money offered. The Stock Breeders and Dairy Associations look after their interests in this annual exhibit, and it would not be unbecoming for this society to appoint a committee, or for the Board to properly bring this subject to the attention of the State Board of Agriculture and suggest needed reforms. If *we* do not take an interest in this subject, who will? While we are not officially responsible as a society for this exhibit, we should endeavor to have it represent, as far as possible, the great fruit interests of the State.

I congratulate the Society on its increased facilities for doing good, and extending the work to new fields of investigation. The outlook is much brighter than it was a year ago, and we should go forward in the work of making our Society a power in its influence for doing good in the State.

DISCUSSION.

Mr. Pearson—I move to refer the report of the President to a special committee. I do not want it to go to the Executive Committee.

Motion carried. President appointed Prof. W. H. Ragan, of Indiana, Mr. S. W. E. Cook of Lacon, and Mr. E. R. Humphrey, of Quincy.

President Dunlap—It is understood that this committee will report to the Association either to-day or to-morrow.

SECRETARY'S REPORT.

BY A. C. HAMMOND, WARSAW.

Our last volume of Transactions, No. 22, was completed and sent to those entitled to it on the 11th of February, about the same date as last year. This prompt publication is very gratifying to our readers and when compared with our neighbors, not one of whom complete their report before July and some of them not until September, is creditable to the management and energy of the Executive Board.

I have, during the season received many congratulatory letters from officers of other societies, asking how it was possible to get out so large and perfect a volume in so short a time.

At the meeting of the Executive Board in Springfield, Jan. 15, 1889, the necessity of doing something in the line of horticultural experiments was discussed, and although without available means, it was decided to begin in a small way, hoping and believing that the Legislature would be made to see the importance of the work and grant us a small amount of means to carry it on.

Bills were, therefore, introduced by Senator Berry and Representative Oglevee, appropriating $4,000 per annum to our Society instead of $2,000 as heretofore. It was bitterly opposed in some quarters, but by the persistent efforts of a few true friends, it finally passed, and on the 17th of May received the signature of the Governor. This bill provides that at least $1,000 shall be expended annually in experimenting "in the growth, care and development of the horticultural interests of the State." All

has been done in this line that circumstances would permit; a report of which will be made during this meeting.

WE MUST ENLARGE OUR WORK.

Our increased appropriation gives us the ability to enlarge our work, as well as increase the labor and responsibility of the officers and *Ad-interim* committees, and the next season will, no doubt, witness a forward movement all along the line. As one means of extending our work, it will, doubtless, be thought best to print and distribute a larger number of reports which will do much to shed horticultural light in those portions of the State where our work is little known.

It has occurred to me that if the Officers, Executive Board and *Ad-interim* Committees were constituted a committee of observation to look after new and promising fruits; the behavior of old varieties under different treatment and on different soils; to encourage and assist in the formation of local Horticultural Societies and Farmers' Clubs, and mingle with the farmers in their Institutes, Clubs and Granges; much might be done to interest them in the work of tree planting, fruit growing and home ornamentation.

FLORICULTURE.

The question of Floriculture we are glad to see coming to the front, and it is our duty as well as pleasure to encourage it, as its influence upon the rural and village home is of the most elevating and ennobling character.

I hope that I may not be considered egotistical if I speak approvingly of the three Floral Societies of my own County. They have been in active existence for several years, and have done much to create a taste for and stimulate the cultivation of flowers, and I will venture the assertion that nowhere in the west can we find three towns of equal size that can boast of as many cultured, pleasant homes and such a profusion of floral beauties as Carthage, Warsaw and Hamilton.

How often have the choicest treasures from these floral collections been called to crown the bride and grace the marriage feast. How many have found their way to the bedside of the sick to shed their beauty and fragrance there, often in the humble home of poverty and distress. And when the black winged angel of death has done its fearful work, how the crushed and bleeding heart has been soothed by these emblems of the brighter life beyond, and comforted by the expression of human sympathy. And methinks I hear the Master say to these ministering spirits, "Inasmuch as ye have done it unto one of the least of these my brethren, ye have done it unto me."

All honor to the Floral Societies of Hancock County; may every town and hamlet in the State emulate their example.

INSECTS AND DISEASES.

The experience of the last year has proven more conclusively than ever before that insects, scab and rot, will destroy from half to three-fourths of our fruit, unless we constantly and persistently combat them. The experience of entimologists and practical pomologists prove beyond question that the codling moth, canker worm and curculio, our three most destructive insects, can be controlled by the use of insecticides, and I am quite positive that diseases of fungous origin, such as Scab, Grape, Peach and Plum rot, can be overcome by the intelligent use of Fungicides, when we learn what to use and how to use it. This question should, and no doubt will receive careful attention at the horticultural experimental stations for several years to come, and we may reasonably expect valuable results.

FRUIT EXHIBITS.

Our fruit exhibits, in connection with our annual meeting, have been very successful and interesting, and should be continued and perhaps more and larger premiums offered. But it has occurred to me that if we could make a satisfactory arrangement with the State Board of Agriculture, as is done in Wisconsin, Minnesota, Kansas and some other States by which a great educational exhibit of horticultural products of all kinds, esspecially new and unknown varieties, could be made at the State Fair, it would prove a great attraction there, and arouse an interest in horticulture that would greatly benefit the farmers and horticulturists of the State. And as the most cordial relations exist between the two Boards, and we are both engaged in the same common cause, I see no reason why an arrangement of this kind cannot be made.

OUR BURDEN BEARERS.

I think it proper at this time to call the attention of the Society to some of the earnest, self-sacrificing men who have done, and are still doing, the work that has given the Society the high position it occupies among the Horticultural Societies of the land.

We have always been fortunate in the selection of Presidents, and to the good work they have done may we attribute much of our success. Our present President came to the office under trying circumstances, but has not proved an exception to the general rule, and for nearly two years has rendered faithful, unremunerated services. During the session of the Legislature he spent weeks of valuable time watching and pushing our appropriation bill, and did much to secure its final passage.

The members of the Executive Board, past and present, are among our most intelligent and faithful workers. Very few un

derstand how much time and thought are required to properly manage the affairs of the Society, hence their work is not always appreciated.

The *Ad-interim* Committees have also done good work for the Society, and I do not think we can do a wiser thing than to enlarge the committee and extend the work into every county in the State.

The work of our experiment stations is such that only the most intelligent, observing and painstaking men can fill the position of Director. And work as they must, without compensation and largely without appreciation, I think we shall always find such men to undertake it.

Besides those enumerated above, we find in every portion of the State men and women who are deeply interested in the work, and ready to respond to every call of the Society. These men and women are its life and hope, and it is a pleasure to know that their number is increasing each year.

RAILROAD COURTESIES.

We appreciate and gratefully acknowledge the kindness of the railroads which have taken into account the meagre means we have with which to do so large a work, and granted us passes, which have enabled the President, Secretary and others to make valuable investigations at a nominal cost.

We are under special obligations to the Wabash, Illinois Central, Chicago & Northwestern, and Chicago, Milwaukee & St. Paul for courtesies extended.

THE PRESS.

We owe a debt of gratitude to the press of our State for their many kind notices of our work, and especially to the agricultural journals, who seem to thoroughly appreciate our work, and understand the difficulties we are laboring under. Through their cordial co-operation, we are able to make public any facts or notices that we may desire.

THE SECRETARY'S WORK.

When the work of the Secretary's office begins to decline, we will know that we are retrogating, but at present we seem to be in no danger of such a misfortune. The determined effort that was made to secure our appropriation, added to the work of all the officers, but especially to the Secretary's.

Our Arbor Day work brought a large correspondence, including many enquiries as to lists of trees for special purposes, methods of planting and caring for them, as well as for a demand for our circulars (although a large number were printed) that greatly exceeded the supply. The number of specimens of

fruit that have been sent to this office for identification, and of new varieties for an opinion as to their probable value, has greatly exceeded that of any previous year.

Our experimental work requires thought and careful attention, and the general correspondence of the Society is constantly increasing. I refer to this only to show that the people of the State are beginning to appreciate our work, and that we are making progress.

OUR REPORTS.

During the past two years, the demand for full sets of our reports has been very large from Agricultural Colleges, Experimental Stations, Scientific Associations and Public Libraries, and it is to be regretted that we have been unable to comply with these requests in full.

When I took possession of the office, I only found from one to a dozen copies of the first eight volumes, while of Volumes XIV, XV and XVI there were from 200 to 300 each. I have, therefore, been able to only furnish sets beginning with Volume IX.

It is to be regretted that provision was not made early in the life of the Society to preserve a certain number of each volume for contingencies of this kind. I found none of the reports of our neighboring societies in the library, but now have on our shelves all of these reports as far back as they can be procured.

Since the last Annual Report the following orders have been drawn on the Treasurer:

Dec.	13, 1888	—J. S. Browne, expense Board Meeting	$	13 80
"	13, "	A. Bryant, expense Board Meeting and cash advanced		15 75
"	13, "	H. M. Dunlap, expense Board Meeting		10 70
"	13, "	F. I. Mann, expense Board Meeting		11 83
"	13, "	E. A. Riehl, expense Board Meeting		6 40
"	13, "	Jacob Auer, premium		8 75
"	13, "	E. F. Babcock, premium		3 00
"	13, "	L. R. Bryant, premium		14 25
"	13, "	E. W. Bryant, premium		1 00
"	13, "	R. C. Berry, premium		3 50
"	13, "	J. J. Cart, premium		1 00
"	13, "	B. Buckman, premium		6 00
"	13, "	L. Hall, premium		75
"	13, "	A. C. Hammond, balance due Secretary		264 09
"	13, "	W. R. Crain, premium		10 25
"	13, "	S. F. Connor, premium		50
"	13 "	G. W. Endicott, premium		1 00
"	13, "	J. T. Johnson, reporting		20 00

Dec.	13,	1888—	J. T. Johnson, premium	$ 16 25
"	13,	"	A. C. Hammond, premium	11 00
"	13,	"	Bessie M. Nash, reporting	20 00
"	13,	"	A. C. Hammond, Board meeting and cash advanced	16 10
"	13,	"	C. B. Rockwell, premium	13 75
"	13,	"	C. N. Dennis, Board meeting and cash advanced	22 51
"	13,	"	E. A. Riehl, premium	18 50
"	13,	"	Frank Harlan, premium	2 00
"	13,	"	John Kramer, premium	3 00
"	13,	"	J. S. Browne, premium	27 00
"	13,	"	J. S. Browne, *Ad-interim* work	17 77
"	13,	"	S. G. Minkler, premium	10 50
"	13,	"	J. S. Browne (Col. Brackett's bill)	4 15
"	13,	"	H. G. McPike, premium	5 00
"	13,	"	F. W. Poscharsky, premium	5 50
"	13,	"	H. K. Vickroy, commission	44 52
"	13,	"	W. M. Samuels, premium	2 00
"	13,	"	Edward Simms, premium	2 00
"	13,	"	J. Webster, premium	14 50
"	13,	"	Mrs. C. E. Collins	4 00
Jan.	16,	1889—	H. M. Dunlap, Board Meeting	13 25
"	16,	"	J. S. Browne, Board Meeting	9 85
"	16,	"	C. N. Dennis, Board Meeting	12 40
"	16,	"	William Jackson, Board Meeting	8 95
"	16,	"	A. Dunning, Board Meeting	20 00
"	16,	"	Arthur Bryant, Board Meeting	16 00
"	16,	"	A. C. Hammond, Board Meeting and cash advanced	19 69
"	16,	"	F. I. Mann, Board Meeting	11 72
"	16,	"	Phil. Dallam, printing	51 00
Feb.	6,	"	Levytype Co., pictures	16 00
"	6,	"	J. W. Franks & Sons, printing transactions	500 00
"	6,	"	Bessie M. Nash, expense reading proof	47 50
"	20,	"	J. W. Franks & Sons, printing transactions	314 22
"	28,	"	J. S. Browne, Board Meeting	6 50
"	28,	"	C. N. Dennis, Board Meeting	12 80
"	28,	"	William Jackson, Board Meeting	6 20
"	28,	"	F. I. Mann, Board Meeting	8 10
"	28,	"	H. M. Dunlap, expense bill	19 88
Mar.	2,	"	L. Woodard, Northern Society	50 00
"	2,	"	A. C. Hammond, expense bill	92 28
Apl.	17,	"	Phil. Dallam, printing	22 50
"	17,	"	A. C. Hammond, cash advanced for experimental work	29 71
May	16,	"	J. S. Browne, Board Meeting	12 55
"	16,	"	C. N. Dennis, Board Meeting and cash advanced	14 40
"	16,	"	H. M. Dunlap, Board Meeting	14 08
"	16,	"	William Jackson, Board Meeting	12 25

May	16,	1889,	Arthur Bryant, Board Meeting	$ 8 50
"	16,	"	F. I. Mann, Board Meeting	5 60
"	16,	"	A. C. Hammond, Board Meeting and cash advanced	20 95
"	16,	"	Treasurer Central Society	50 00
"	16,	"	Treasurer Southern Society	50 00
"	16,	"	H. M. Dunlap, expense bill	5 50
July	3,	"	A. C. Hammond, on salary	200 00
Aug.	3,	"	M. Crawford, account experimental work	24 72
Sept.	12,	"	Phil. Dallam, printing bill	12 50
"	24,	"	J. S. Browne, account experimental station	30 77
"	24,	"	J. S. Browne, *Ad-interim* work	10 10
"	24,	"	A. C. Hammond, account experimental station	88 55
"	24,	"	A. Bryant, account experimental station	10 10
"	24,	"	A. C. Hammond, Committee meeting and account experimental station	10 50
"	24,	"	A. C. Hammond, expense bill account experimental station	20 65
"	24,	"	A. Bryant, Committee meeting and account experimental station	8 00
Oct.	26,	"	J. S. Harris, Trees, account experimental station	10 00
"	26,	"	A. G. Tuttle, Trees, account experimental station	15 00
"	26,	"	Elwanger & Barry, Trees, account experimental station	18 86
"	26,	"	Klark H. Lewis, typewriter	50 00
			Total,	$2,639 95

The expenditures and receipts of the Secretary's office have been as follows:

EXPENDITURES.

Express	$ 14 78
Wrapping Paper, Twine and Stationery	4 45
Letter Postage	24 00
Postage on Circulars	39 50
Postage on Books	31 82
Railroad and Hotel Bills	34 05
Office Table	6 00
Postal Cards	3 00
Freight and Drayage	6 83
Telegraphing and Telephoning	1 56
Incidentals	4 32
Blank Books	1 70
Salary	400 00
Office Help	50 00
Total	$622 01

RECEIPTS.

Jan. 16, Part of Order 51		$ 6 90
Mar. 2,	" 64	92 28
July 3,	" 77	200 00
Fourteen Memberships		14 00
Total		$313 18
Balance due Secretary		$308 83

TREASURER'S REPORT.

H. K. VICKROY, Treasurer,
In account with the ILLINOIS STATE HORTICULTURAL SOCIETY.

RECEIPTS.

Dec. 11, 1888--To balance		$ 696 39
" 13, " To Cash--membership fees		81 00
Jan. 16, 1889-- " State appropriation		200 00
Feb. 8, " " " "		1,800 00
Aug. 14, " " M. Crawford & Son returned		1 54
Dec. 12, " " State appropriation		1,000 00

EXPENDITURES.

Dec. 13, 1888--By cash, J. J. Cart	No. of order,	18	$	1 00
" " " Benj. Buckman	" "	19		6 00
" " " L. Hall	" "	20		75
" " " H. M. Dunlap	" "	10		10 70
" " " L. R. Bryant	" "	15		14 25
" " " Arthur Bryant	" "	8		15 75
" " " E. W. Bryant	" "	16		1 00
" " " F. I. Mann	" "	11		11 83
" " " C. N. Dennis	" "	9		22 51
" " " A. C. Hammond	" "	21		264 09
" " " Miss Bessie M. Nash	" "	28		20 00
" " " A C. Hammond	" "	29		16 10
" " " " "	" "	27		11 00
" " " C. B. Rockwell	" "	30		13 75
" " " E. A. Riehl	" "	31		13 50
" " " J. S. Browne	" "	7		13 80
" " " " "	" "	35		27 00
" " " " "	" "	36		17 77
" " " J. T. Johnson	" "	26		16 25
" " " " "	" "	25		20 00
" " " J. S. Browne	" "	38		4 15
" " " Jacob Auer	" "	13		8 75
" " " W. M. Samuels	" "	41		2 00

Dec. 18, 1888,	By cash,	E. F. Babcock	No. of order,	14	$	3 00
" "	"	H. G. M'Pike	" "	39		5 00
" "	"	E. A. Riehl	" "	12		6 40
" "	"	S. F. Connor	" "	23		50
" "	"	H. K. Vickroy	" "	33		44 52
" "	"	G. W. Endicott	" "	24		1 00
Dec. 20, "	"	J. Webster & Son	" "	43		14 50
Dec. 22, "	"	F. Harlon	" "	32		2 00
" "	"	F. W. Poscharsky	" "	40		5 50
Dec. 24, "	"	W. R. Crain	" "	22		10 25
" "	"	S. G. Minkler	" "	37		10 50
" "	"	R. C. Berry	" "	17		3 50
" "	"	Mrs. C. E. Collins	" "	44		4 00
Dec. 26, "	"	John Kramer	" "	34		3 00
" "	"	Edward Simms	" "	42		2 00
Jan. 16, 1889—	"	F. I. Mann	" "	52		11 72
" "	"	C. N. Dennis	" "	47		12 40
" "	"	J. S. Browne	" "	46		9 85
" "	"	A. Bryant	" "	50		16 00
" "	"	H. M. Dunlap	" "	45		13 25
" "	"	A. Dunning	" "	49		20 00
" "	"	A. C. Hammond	" "	51		19 69
" "	"	Wm. Jackson	" "	48		8 95
" "	"	A. C. Hammond	" "	53		51 00
Feb. 11, "	"	Miss Bessie M. Nash	" "	56		47 50
" 13, "	"	The Levytype Co	" "	54		16 00
" 14, "	"	J. W. Franks & Sons	" "	55		500 00
Mar. 2, "	"	J. W. Franks & Sons	" "	57		314 22
" 4, "	"	J. S. Browne	" "	58		6 50
" 4, "	"	Wm. Jackson	" "	60		6 20
" 4, "	"	C. N. Dennis	" "	59		12 80
" 7, "	"	F. I. Mann	" "	61		8 10
" 8, "	"	H. M. Dunlap	" "	62		19 88
" 9, "	"	A. C. Hammond	" "	64		92 28
April 22, "	"	A. C. Hammond	" "	66		29 71
" 22, "	"	Phil. Dallam	" "	65		22 51
May 6, "	"	L. Woodard	" "	63		50 00
May 16, "	"	F. I. Mann	" "	72		5 60
" "	"	H. M. Dunlap	" "	69		14 08
" "	"	H. M. Dunlap	" "	76		5 50
" "	"	A. C. Hammond	" "	73		20 95
" "	"	Wm. Jackson	" "	70		12 25
" "	"	J. S. Browne	" "	67		12 95
May 21, "	"	S. F. Connor	" "	75		50 00
May 22, "	"	W. H. Schureman	" "	74		50 00
May 24, "	"	A. Bryant	" "	71		8 50

May. 24, 1889,	By cash,	C. N. Dennis	No. of order,	68			$14 40
July 13,	"	"	A. C. Hammond	"	"	77	200 00
Aug. 8,	"	"	M. Crawford & Sons	"	"	80	24 72
Sept. 28,	"	"	J. S. Browne	"	"	80½	30 77
"	"	"	J. S. Browne	"	"	81	10 10
"	"	"	A. C. Hammond	"	"	84	20 65
"	"	"	A. C. Hammond	"	"	82	88 55
"	"	"	A. C. Hammond	"	"	86	10 50
"	"	"	Phil Dallam	"	"	79	12 50
Oct. 7,	"	"	A. Bryant	"	"	85	8 00
"	"	"	A. Bryant	"	"	83	10 10
Nov. 2,	"	"	A. G. Tuttle	"	"		15 00
"	"	"	J. S. Harris	"	"	87	10 00
"	"	"	Ellwanger & Barry	"	"	89	18 66
Nov. 9,	"	"	H. N. Lewis	"	"	90	50 00
		Total					$3,778.93 $2,639.96
		Balance					$1,138.97

Respectfully submitted,

H. K. VICKROY, Treasurer.

REPORT ON FARMERS' KITCHEN GARDEN.

BY J. M. PEARSON, GODFREY.

Mr. President and Members of the Illinois State Horticultural Society:

One year ago, I took occasion to say a few words about the "Farmers' Kitchen Garden." I did not say much, but, I suppose, because I did not say it very well, your Society has very kindly given me another chance, vainly hoping that I might improve. I, too, have had another year's experience, and it has been very satisfactory. Although none of you doubt it, I wish to say a few words to prove that, of all things to be had on a farm, the "Kitchen Garden" is the one thing absolutely essential.

First—We all need one.

Second—We all can have one.

Third—It costs but little, and yet a farmer *cannot*, for love or money, secure the delicious products, unless he grows them himself.

He may, as he needs, buy a horse, a cow, a bunch of steers, or hogs, turkeys, chickens, ducks and geese. He cannot help

buying the new-fangled tools, if he listens to the oily tongues of the brazen-cheeked agents, and as for trees and shrubs, he *must* buy them, to get rid of the persistent, prevaricating, persuading peddler. But a "Kitchen Garden," he can neither buy, beg, nor borrow. He must make it himself. I own, it is pretty hard for some of us, who have almost learned to buy everything and sell everything, except the farm.

When I say "he must make it himself," I mean to be understood literally. I would not exclude the wife or mother, for she is part of the farmer, and generally has nothing else to do in the spring and summer times. I have seen excellent Kitchen Gardens that owed their good looks to the mother, from the time the plow left the soil. This makes me think that Kitchen Gardens are like children, who generally owe their good looks, whether of form, feature or clothes, to the same good woman. This makes me think, too, that children, one's own I mean, are good things to have in the Kitchen Garden. But I would as soon have the bull or the turkeys in mine as the ordinary "hired man"; he's no good. One's own children can be utilized and educated, at the same time, in the Garden.

The Garden must be near the house, where the owner will see it many times a day, and often improve the waiting moments. It must be enclosed, at any rate, a part of it. It must be well manured every year.

It should face the south and it should not have any trees near it. It should contain, for the ordinary farmer's family, about one-fourth of an acre. After plowing the work will be done with hand tools mostly. If you wish to have a garden next year start now. In our stiff clay soils, several day's time in the spring can be gained by throwing with the plow the soil into narrow ridges, say two furrows on each side, and giving surface drainage to the dead furrows so formed.

Just as soon as the soil will work kindly, in my vicinity about the middle of March, I plant the Extra Early smooth peas, following them at intervals with American Wonder and Champion. At the same time set out onion seedling sets, and plant salsify. This has been my first installment of work for twenty-three years. I do not advise the making of hot beds as profitable for any ordinary farmer, but as a means of education for children it is not surpassed. I learned much myself in this way, and have found no trouble in interesting my children in their care. But financially it is better to buy plants. For two dollars I can secure all the early plants of every thing I need. I mention cabbage, cauliflower, tomato and sweet potato plants as needful for every one. Beets, turnips and carrots will do well enough planted out doors. It will not do to hurry the planting of any of the bean family, as they are sensitive to cold and are stunted in

their growth, if not actually killed by it. I would advise a pretty early planting of the small sweet corn, to be followed about two weeks later with the larger, better varieties. Of course weeds are not allowed and the soil must never be allowed to crust over by heat. In the corners of the garden where the plow will not reach, you can profitably have a few ever-growing onions, spinach, sweet herbs and horse radish for the family. Of course these ways will be ridiculed by the professional market gardener, but it is none of his business as he is not compelled to follow us. What would be wise and profitable for him would be folly and extravagance for us, and *vice versa*.

Although we cannot hurry up the planting of the beans we must not neglect them. The bush beans for early, and for late the genuine lima. We have tried some of the so-called "improved varieties," but have, after trial, been compelled to go back to our first love, the old large lima. It is on this plant that you may exercise your patience, ingenuity and skill. I have secured a good stand by gently helping the baby beans to the light of this world, with my knife gently loosening the soil around the swollen seed leaves so that they could open themselves to the sun, and even removed the tough skin for the same purpose. Then, too, the average young lima bean will need several lessons before he can succeed in climbing; and I have even been compelled to lash him to the stake, once taught he climbs hand-over-hand. Don't let more than three plants grow in a hill, otherwise you will have a crop of all vines. I don't know what to say about late cabbage. For the last few years the worms have made cabbage life a burden. Paris green will kill them, but it must be faithfully applied early and late.

I wish to include among the indispensables Rhubarb and Asparagus. The former, to do well, will ask for the whole manure heap, and the latter will not be willing to divide the aforesaid heap. But for the former, it can be helped by re-setting and dividing, and the latter, by giving plenty of room for the plants. This last, you need make but once in a lifetime. I know beds in continual use for more than forty years, and have one myself almost twenty years old, and still doing well.

This is about all I want to write. I hope some of you will be foolish enough to ask questions. A nice old gentleman did this last year, but he died, or will, die after it.

As I close, a vision of green, soft things comes up before me, beautiful to behold, but still more beautiful to realize, ministering not only to fleshly appetite, but invigorating the senses, and causing us to render grateful thanks to God, the Giver. I have said it could not be bought, begged, nor borrowed, and I now believe its value cannot be estimated in dollars and cents. You

might as well talk of "buying a sunset," or "purchasing filial love."

DISCUSSION.

Dr. Lyons—I did not hear any specific directions about raising lima beans. I have often failed to get a good stand. I first get my ground in good shape and then I am careful to plant the bean with the eye down. If it is put down flat, it will rot.

Mr. Pearson—That is all old work. I also am careful to put loose soil over the beans and to keep it loose. Many times when a crust forms over the beans they will break their stems in trying to get to the surface, that is to say, it dies in being born. I have dug the soil loose and they will sometimes come up with a snap. I let them run as high as I can reach, and then pinch back.

Mr. Hay—There is a new bean—Henderson's small Lima—that is very satisfactory. It does not need poling at all.

THE FARMERS' KITCHEN GARDEN.

BY L. A. BUDLONG, BOWMANSVILLE.

There are but few people who do not like all the garden vegetables in one form or another, as they are prepared for food; and there are no articles of diet that contribute more largely to our general health, and to depriving the doctor of his fees, than do they, when they are generally used. Not only are they the most healthful articles of diet, but many of them are most luxurious as well; and in times of scarcity are more sought after and command a higher price than almost any other article of human food. Such being the fact, do our farmers realize it? Do they realize the value and importance of a good Kitchen Garden? Do they realize that the absence of a Kitchen Garden and the cultivation of corn and oats, and the living on "hog and hominy" may be one of the causes of that complaint which we so often hear, that our farmer's boys are leaving our farms, and seeking to live in the cities? The housewife who said that "the way to reach a man's heart is through his stomach" knew well the value of a well provided table, in maintaining a happy home, and were she a farmer's wife might well say "give me a good Kitchen Garden," and I will be responsible for the rest. However desirable good gardens are, the writer is

persuaded that they are far from being as universal as they should be on our farms. And especially, is this the case, among our western farmers. Their attention and time being occupied so closely, with their broad, and numerous acres, that they hardly find time to think of the value and importance of the small lot of land. Our good housewives are always advocates of a good Kitchen Garden, and are keenly alive to its importance. They know the value of it to their tables; that when they are perplexed and can hardly decide what to prepare for the next meal, (to best please their "lord and master") how often the Kitchen Garden will come to their rescue, and contribute largely to a meal that is fit for a king. We are firmly impressed that there is little that our farmers can do, that will result more to the material benefit of their families, for the time expended, than to supply them liberally with good garden vegetables; and being of this mind it seems that such a course should be pursued in preparing this paper as might induce the largest number to try the plan. To this end, with your kind indulgence let us attempt to produce in a farmer's garden the vegetables recommended last year, in some way that may best suit our situation. First, let us consider that very little, if any land is rich enough without fertilizing, to grow an assortment of good vegetables; consequently we must use manure and use it liberally. We will select an acre of our best land, far enough from our house to be out of the range of our poultry yard, for the garden and poultry cannot thrive well together, and we want to save the time and expense of fencing against them, if near the house; and besides we want room; we are not fitted to enjoy being cramped up in a small inclosure. Having made our selection we will fertilize with a good coat of manure, and plow it in the fall, if possible, and again in the spring, pulverize nicely, and level the surface as much as practicable.

The vegetables recommended to us by our committee last year are asparagus, radishes, lettuce, peas, beets, onions, salsify, cabbage, tomatoes, bush beans, sweet corn, lima beans, cucumbers, melons, rhubarb, horseradish, and I will add potatoes and turnips. Here are eighteen different varieties, and the problem to solve is, to successfully cultivate them with ordinary farm tools and get the best crop at the least cost. We will plant in rows three feet apart, some in hills and some in drills. First to be planted in the spring, are the most hardy sorts which are the asparagus, rhubarb, horseradish, peas, onions, radishes, lettuce, beets, salsify, cabbage, potatoes and tomatoes. After marking the ground in rows three feet apart we will plant according to the following table, which shows the quantity of each kind of seed needed, the length of row and what part of an acre it should plant, and the yield to expect, according to the average of its kind.

Amount of Seed.	Length of Row it Should Plant	Part of Acre it Should Plant.	Amount of Crop.
2 quarts Early Peas	44 rods	4-80 of an acre	5 Bushels.
2 " Late "	44 "	4-80 "	5 "
1-4 pounds Onion Seed	66 "	6-80 "	15 "
1-8 " Beet "	33 "	3-80 "	7 "
1-8 " Salsify "	22 "	2-80 "	5 "
50 plants Asparagus 50 " Rhubarb 20 hills Horse Radish	22 "	2-80 "	
100 Early Cabbage 300 Late "	44 "	4-80 "	350 Cab'ges.
90 Tomato plants	22 "	2-80 "	20 Bushels.
3 bush. Potatoes	308 "	28-80 "	75 "
2 ounces Radish Seed	6½ "	1-80 "	
2 " Lettuce "	6½ "	1-80 "	
1 pint Early Sweet Corn	33 "	3-80 "	40 Dozen.
2 quarts Late " "	99 "	9-80 "	120 "
2 " Bush Beans	44 "	4-80 "	5 Bushels.
2 " Lima "	44 "	4-80 "	5 "
2 ounces Melon Seed	22 "	2-80 "	22 Dozen.
2 " Cucumber Seed	22 "	2-80 "	10 "

Peas, onions, beets, salsify, radish, lettuce and beans, sow in drills. For asparagus and rhubarb, dig a trench one foot deep, by one wide, fill the trench half full of manure, and set the asparagus so that the crowns of the plants will be from four to six inches below the surface of the ground, and the rhubarb so that the crown of the plant will be just under the surface. Plant in hills three feet apart.

Any part of a horse radish root that has the bark on will grow. Cut the root in pieces about two inches long. Plant in hills two feet apart, and four inches deep. Sow cabbage and tomato seed early, very thick in drills, and when large enough, transplant the former two feet between each hill, and the latter, four feet. Cut the potatoes in pieces, three eyes on a piece, and plant fifteen inches apart. Plant the early sweet corn two and a half, and the later, three and a half feet between the hills. Plant both as soon as safe from frost, and follow with three more plantings of the late, with from ten days, to two weeks, between each planting. This will give sweet corn every day from the time the first is fit to cut, until frost comes.

Plant melons and cucumbers from May 25th to June 15th, in hills five feet apart. Early planting is more liable to be destroyed by striped bugs and cut worms. By the tenth of July, both kinds of peas have done bearing; clear away the vines, cultivate

the ground, and from the first to the tenth of August, cultivate again, and sow with flat turnip seed. Be careful and not sow it thick.

The writer remembers asking his father when he was a boy, what was the proper quantity of flat turnip seed to sow on an acre? He replied, "The rule is to sow one pound, and when you have to sow it, you must weigh just a pound, take one half of it, and start to the field to sow it; fall over the fence while going, and spill half of it, and sow the rest." Before we finish planting, weeds will appear, and as soon as they do, (do not wait until they have grown two or three weeks) start the cultivator, and destroy them on all of our plat of ground; the part that is not planted, as well as the part that is. And all through the season, as often as any weeds appear destroy them, and do not allow one to seed on any part of the ground.

Our ground is all planted in rows three feet apart, and being so, admits the using of ordinary farm tools for its cultivation, and saves us all the expense and trouble of buying and caring for a special set of garden tools. A small hot bed would assist us very much in getting the best results, but as we have undertaken to make our garden by using such tools and means as the ordinary farmer has at his command, and as the time and space I might occupy may be needed for others, I will leave that. There are also insects and grubs that will need our attention, but we can hardly take time now to make their acquaintance and learn their habits.

Our garden may be a little more extensive than will be needed for ordinary families, but it will be readily seen that any portion of it may be cultivated as well as the whole. Two hundred dollars expended in a city for vegetables needed for our tables would not supply us with more than our plat of ground will produce with an ordinary yield, while but a small portion of that sum will need to be expended to furnish them for us, on our farm, and we shall have them fresh and better than they can be furnished to us in any city. I have endeavored in this article to furnish a guide that will lead the most inexperienced to success, and I would urge all to try and attain it; but while doing so, do not forget the orchard, the small fruits, and some place for flowers that will furnish bouquets and gladden the hearts of our wives, children and friends, making them feel that the prettiest and best place about our homes are our Farm and Kitchen Gardens.

Following the paper Mr. Budlong said: I sow lima beans in drills and plant a variety that does not run so that I do not have to pole them. I plant the rows about three feet apart, so that I am able to cultivate them with the ordinary farm tools. Some of

the remarks in the paper as to time of planting will not apply to the southern part of the State, as this was written for the northern part. I would add, destroy all weeds both on the unplanted as well as the planted ground.

DISCUSSION.

Mr. Coe, of Quincy—As I am on the program for Horticultural Observations, and part of my paper is on the Kitchen Garden, I beg to read that part of my paper just here before the discussion of the Kitchen Garden papers.

President Dunlap—If there is no objection, Mr. Coe may so read his paper.

Mr. Coe read as follows: The ideal garden should be a rectangle, say eighty feet wide and ten to twenty rods long. The rows should be placed crosswise of the garden, thus making them eighty feet long and there should not be less than a row of any fruit or vegetable planted. One end of this rectangular garden, which may be termed the permanent part of the garden, should be occupied by one row of each of the following: Currants, gooseberries, pieplant, asparagus and, if you wish your neighbor's daughters to visit you, one row of rose bushes, of as good a variety as possible. If this last row is well cultivated you can raise roses by the thousand and will find them far superior to those grown in the sod. Again, one row of black raspberries, one of red raspberries and three rows of grapes, each row being of a different variety. The following is a good selection: One of the black such as Worden or Concord, one of the red such as Deleware or Brighton, and one of the white varieties, Niagara or Duchess. I would now plant three rows of strawberries and then the vegetables. As I have found by experience that nothing pleases the cook so well as a good variety, call or send to the seed store for a catalogue. Select from this such varieties as you like best, send on your order accompanied with the money and in due time the seeds will be sent, which if properly planted, and the plants well cultivated, will give you plenty to eat of everything in its season. This style of garden will do for the farmer of 80, 160 or 320 acres of land, with a family of six, eight or ten. It should be fenced on all sides with good woven wire fence. Remember to leave at least ten feet between the ends of the rows and the fence for a "turn row." Now be sure to have a one-horse cultivator harrow, and garden culture is made easy.

DISCUSSION.

Mr. Coe added—I use a cultivator hoe, and find it very good. One end of the tooth is cultivator shaped, and it throws dirt to

the plants. The other end of the tooth is for harrowing, and very little remains to be done with the hoe.

Dr. Humphrey—I like the papers, but I think there is a little lameness in Brother Pearson's. He ought to have used two words emphatically—"early" and "in season." If a man is going to run a truck patch, it is not like running a farm. I have a brother that can run a farm better than I can, but I can beat him in the truck patch. If you don't plant just at the right time, just when the iron is hot, you lose a good deal. I am also surprised that in neither of the lists are some of the best vegetables grown. I did not hear anything about spinach, or carrots, or parsnips.

Mr. Pearson—We plant spinach in the fall, but we are two or three hundred miles apart. I said in my paper, to work as soon as the soil works kindly, and with us that is about the middle of March. I meant to say early, and if the Doctor didn't hear that, I can't help it.

Mr. Gay—I think one important thing left out was celery. Some gardeners think it is hard to grow, but I think it is about as easy grown as radishes, and is one of the best things in the garden. Another thing I want to impress on the attention of the members, and that is the having a small hot-bed. It is easily made, and I do like the hot-bed.

Mr. Beeby—And I want some cauliflower. It is better than cabbage and is raised easily.

Mr. Vandenberg—As to the garden being away off in the field, I would say that that is no place for it. If the garden is far from the house, where it is difficult for the women folks to get to it, you will frequently go without vegetables for dinner. Therefore, I say, have your garden close to the house.

Dr. Lyons—Celery is very easily grown and does not require as much work as cabbage. Plant in rows about eight inches apart in well manured soil, then let them alone until August. About that time take a five-inch drain tile and pass your arm through the tile and gather the stems of the celery together and pass them into the tile. Then cultivate until the stems fill the tile. About the first of September put a little mulch about the celery, and that is all that it needs.

Mr. Budlong—I expected my article would be criticised for what it did not recommend, and I find that considerable is left out. Celery is one of the things I expected would be mentioned. I started to write of a vegetable garden containing the number recommended last year, with two additions. As to celery, I find it very hard to raise except on ground especially fitted for it. If the ground is sufficiently moist and watered from underneath, it may do well. If you water the ground, or if you have sufficient rains in the fall, you can raise celery successfully, but on the ordinary prairie soil I would not recommend any man who is so situated as to be able to buy a few bunches at a reasonable price, to spend time trying to raise it. As to having the garden near the house. Of course there are reasons why some may want it there. If a man wants his wife and children to do the garden work, then it may be better near the house; and, of course, it is more convenient in gathering for the table. I think that if any of you will try the plan of planting the garden away from the house where you can use the plow and cultivator, you will never after cramp it up in a little fenced patch near the house. There is really little more need of the hoe in the garden than there is in growing corn, provided you have the garden where you can use the common farm tools.

President Dunlap—Mr. Budlong has about 400 acres in garden near Chicago, and I presume he is able to answer any questions.

Mr. Gay—As to raising celery, Mr. Budlong has been talking about raising it for market, when our discussion is for raising it in the kitchen garden. I raise it and have little trouble with it. After I have gathered my sweet corn I put out celery on the same ground, the ground of course being in ridges and hollows from the cultivation of the corn. I cultivate the ridges a little, hoeing in a little dirt until about Sept. 1st. Then I open up a ditch about a foot wide and two feet deep and put in a frame of boards about three feet wide and as long as the trench. Of course the ends of the frame must be kept partly open for ventilation, and you can go and get your celery any time until spring. There is great difference between celery so grown and that which is shipped in. I know farmers who stop on their way to town and buy celery of me, possibly to the amount of $15 per year,

while it doesn't cost me over, perhaps, $1.00 per year for celery in my family.

Mr. H. D. Brown—Some one has said something about the farmer's garden being an acre. I have experienced one "acher" about the garden, and that is a back "acher." I am in the nursery business, and I know that gardening is hard work, and I say, therefore, don't expect your ladies to do the work. Another thing; get your peas, early beans and all such things in early. Just as soon as you can, get at your planting, and never mind about the frosts.

Dr. Humphrey—Mr. Budlong, how do you plant and gather parsnips?

Mr. Budlong—I plant almost everything on level ground, and I cultivate level. I don't even hill potatoes. I used to hill them, but I have quit it, and I have got the best results without it. For the cultivation of all those small roots, I make the ground as level as possible. I plow the ground in the fall, because the grub worm whose nature is to hatch in the fall, and then burrow in the ground, thus stands a good chance of being frozen, being turned up to the frosts. And if you plow in the fall, plowing under manure, and the spring is wet, you can then cultivate without plowing; while, if you wait till spring to plow, you may have to plow when it is too wet. In the spring, if I can, I plow a second time to bring the manure to the surface, and use a smoother on the ground. Then for planting small seeds I use a seeder. I use one putting in three rows at a time. I would not recommend a machine so expensive as that to our farmers, but you can put in the seed with your fingers, being careful not to press the dirt down. I don't know anything that I want the dirt pressed on. I never touch the ground unless it is in fit condition. You say, suppose the ground is dry, what do you do? Well, it is seldom but that you can cultivate it to get moist dirt to the surface, but if it is too dry, I leave it until it rains. My early experience—some thirty years ago—was in New England on sandy soil, and there it did not make so much difference, you could handle the ground almost any time, and still if I was there again, I would do as I say now, only handle the ground when it is in good condition. I think it was in '61, the second year that

I was on the farm where I am now, I had several acres in beans. They were up large enough to cultivate, and I got up one morning, and found that it had been raining during the night, and threatened to rain more. However, I started the cultivator in the beans. About the middle of the forenoon it cleared, and by noon it was bright. The result was that that forenoon's work cost me, at least, $150, by working when the ground was too wet. The beans rusted until almost entirely spoiled, and I have never cultivated when the ground was too wet since. If the ground turns up slick when it is plowed, it is too wet. As to digging parsnips, I plow by the side of the row with a common plow, and pull the parsnips out by the side of the row.

Mr. Pearson—I believe I have not had much experience with the ground being too dry; it sometimes damages my back, but not the soil. But you have got to keep off the ground when it is wet. I want the ground to work kindly. I would not advise any farmer in my neighborhood to undertake to run a garden of an acre. If he has one-fourth of an acre, and handles it well, he will find it enough. I don't believe, either, in leaving the work to the wife and children, or the hired man. My enclosed garden is close to the house, where I must see it at least twenty times a day, and after the ground was plowed there was no hired man in it, and I don't believe I was in it more than half an hour any day, and I have few, if any, weeds in it, either. Most of my work in that garden was done with the hoe. I know market gardeners say that it will not pay to use the hoe, but when I have a garden no bigger than this room, I think I can use the hoe to good purpose.

SMALL FRUITS FOR THE FARMER'S GARDEN FOR A FAMILY OF SIX—VARIETIES, CULTIVATION, AND AMOUNT.

BY J. WEBSTER, CENTRALIA, ILL.

We are living in a progressive age when it becomes the tillers of the soil, to understand and realize the things around them, seeking to harmonize their pursuits with the peculiarities of their surroundings, latitude, soil and climate. It is truthfully claimed that successful farming is more complex than a majority of trades, and demands executive ability equal to the management

of any business except one, the nursery business, which we who have tried, know needs more than the professions.

The practice of gardening must necessarily vary much under different conditions of soil and climate, as also in our own State of Illinois, Northern, Central and Southern, but some of the rules laid down are of universal application. The production of a garden the world over will depend very much on the rain-fall, or artificial supply of water, and the judicious application of manure and labor applied at the proper time.

The Greeks borrowed their methods of gardening from the Persians. In our day and age we have abundant opportunities of borrowing ideas from a mixed race of people, from every civilized quarter of the globe directly and indirectly through the Horticultural Journals, from men who are born gardeners; from men who are gardeners in name; from men who are gardeners for the love of it; and the little money and glory there is in it. Every farmer should be a gardener to the extent of supplying himself and family with healthy, life-giving, and life-sustaining vegetables and small fruits.

The pioneers in horticulture are true missionaries, and have done good work in helping mankind in this particular.

In treating this subject it is necessary to give directions for starting right. If the new beginner cannot comply in every particular, let him come as near to it as possible so as to make a start.

After selecting a good piece of ground convenient to the house, make a liberal application of barnyard manure, ten to twenty two-horse wagon loads per acre; this should be spread as evenly as possible over the intended garden and then broken up fine and evenly scattered. Plow under to the depth of eight inches.

A heavy clay soil will be benefitted by running a subsoil plow in every furrow, that will loosen to the depth of four inches without turning on top; then drag the entire surface both ways with an Acme pulverizer until it suits you, so that in early spring it will be all ready to lay off and plant.

During the winter months post yourself by every possible means as to varieties adapted to your locality, avoiding the mistakes made by others, and making note of the success of your neighbors.

The next important step is to lay out your ground so that the greater part of the labor in cultivating can be done with tools at your command at odd times, with one of the farm mules or horses. Arrange for a "drive" also as hereafter stated for the convenience of hauling and applying manure.

A convenient length would be six hundred feet. Three rows of strawberries this length should make an adequate supply for a family of six persons.

The ground, if possible, should be nearly level, with a fair surface drainage. Plant your rows so as to run parallel north and

south. Two and a half feet from the western line of your garden stretch your line, walking on it so as to leave a well defined line mark on the soft ground. Plant your first row of strawberries fourteen inches from plant to plant, two of a staminate variety, such as Sucker State or Minor and three of pistilate varieties such as Warfield or Crescent. If you wish to keep the varieties unmixed for future planting, it is necessary to plant the second row entirely of staminate, and first and third of pistilate varieties.

One or twenty kinds may be planted in the same row by leaving a space of three feet between kinds in the same row, and driving down into the ground firmly a label stake to keep the plants from mixing by running together. We find it necessary to go through the rows with a harrow tooth, V shaped cultivator in the same direction once or more every ten days, from the first of August to the end of the growing season. This would be the matted row system of cultivation. Strawberries may be planted from the twentieth of March to the tenth of May according to location and latitude.

The road to success lies near frequent, thorough and clean cultivation. A half hour may be profitably spent with the hoe quite often through the summer months.

Between the rows the weeds may be kept subdued with a one-horse cultivator or small plow, as comman sense and circumstances will dictate. An occasional smoothing and breaking of lumps is of great advantage in hot, dry weather.

We use a cheap, home-made drag, on which we believe there is no patent. It is made as follows: Take a piece of cypress, or pine joist, two by ten inches; saw six pieces, two feet, ten inches in length. Lay them down on the smooth, hard ground so as to lap on each other three inches, like barn-siding; bolt the pieces together in this manner, with twenty-four light carriage bolts of the required length and size; then, with a saw, rip through the center, crosswise of the laps. You have now two pieces, one foot, five inches wide; couple them together with two heavy strap hinges on top; fasten a short chain by means of a two-inch auger hole in the front board, to attach a singletree; adjust so as to drag square, the driver riding in a standing position. A similar drag, four feet wide, may be of great benefit in the cultivation of other small fruits.

Mulching should be done promptly the early part of the winter when the ground is frozen. Cover so as to entirely hide the plants, but not too thickly. One good square two-horse load of slough, or prairie hay, or straw, is enough for one-fourth of an acre. Oat straw, or forest leaves, will answer, but under no consideration use buckwheat straw.

Plant your gooseberries five feet from the third row. Plant a row of Downing fifty inches from plant to plant, a continuous

row, the same length as strawberries. Our mode of planting gooseberries, currants, raspberries and blackberries, is to make a straight, deep furrow with a one-horse plow, by going twice in the same furrow, if not wet. Break up the lumps by dragging a flat stone, or hard piece of wood, eight inches wide, of one hundred pounds weight, up and down the furrows. This will leave the ground in better condition, and greatly facilitate rapid planting.

Six feet from the fourth row, plant a row of red raspberries, two hundred feet in length; the first half of Turner, requiring thirty plants, and the second half of Cuthbert, requiring fifty plants. It is necessary to plant raspberries about four inches deep, covering to the depth of from one to two inches at time of planting, and well firming the earth about the plants, filling up as they grow.

Seven feet from the fifth row, plant a row of Souhegan, or Tyler.

Blackcap raspberry, twenty-six inches from plant to plant, observing above instructions. Seven feet from your sixth row, plant another row of raspberries, Shaffer's Colossal, or Gregg, as your taste may choose. This will give you three rows of raspberries, two hundred feet long, and if a liberal mulching of manure, or half rotten straw, is given, and occasional cultivation through the summer, they will not fail to supply you with raspberries. It is best to renew them every six years, at least.

On this plot of ground two hundred yards long, there should be left a ten-foot wagon drive, to be sown in tame grass. Three and one-half feet from wagon drive, plant eighth row, on well manured, deeply-plowed ground; a permanent row of Colossal asparagus, twenty inches from plant to plant, in a furrow four or six deep. Five and one-half feet from ninth row, plant a row of mixed varieties of currants, three and one-half feet from plant to plant, or four in black soil. Fay's Prolific is desirable north of Centralia. Victoria, Red Dutch, White Grape and Lee's Black, are reliable in most parts of Illinois. Currants require rich, deep soil, with fair surface drainage; are greatly benefitted by a liberal coating of manure annually.

Seven feet from tenth row, plant a row of blackberries; Early Harvest, Lawton and Taylor, south of Vandalia; Snyder, Erie, Stone's Hardy and Western Triumph, in the north and central part of the State.

Eight feet from the eleventh row, plant a second row of some of the above blackberries, as they are a staple fruit for canning. The first season they need occasional hoeing, and always thorough horse cultivation in early summer. After the first season, the growing canes are kept topped while the wood growth is soft, in June and July, to three and one-half feet high. No

fruit will make a better return in yield and quality for heavy manuring than the blackberries.

Thus a farmer can have, if he will, on a plot of ground convenient to the house—two hundred yards long, by thirty yards wide, three rows of strawberries, one of gooseberries, two rows of asparagus and rhubarb, one of currants, two of blackberries and a convenient drive-way. At first cost, for plants and labor of not to succeed forty dollars, a supply of small fruits and asparagus for a family of six persons, the value of which cannot be measured with dollars and cents.

REPORT OF THE EXPERIMENT STATIONS.

BY A. C. HAMMOND, SECRETARY.

At the January meeting of the Executive Board it was decided that it was imperatively necessary for this Society to do something in the line of experimental work. In the face of many discouragements, and without means to meet the necessary expenses, they boldly assumed the responsibility of establishing nine stations, three in each of the three horticultural divisions, and determined to ask the State to grant a larger appropriation to enable them to properly carry forward the work. And as you all know, a bill of this kind was introduced in the Legislature and persistently pushed to a favorable issue.

The following is a list of the number, location and Directors of the several stations:

No. 1—Princeton, Arthur Bryant, Director.
No. 2—Nursery, J. V. Cotta, Director.
No. 3—Marengo, C. W. Prescot, Director.
No. 4—Savoy, H. M. Dunlap, Director.
No. 5—Warsaw, A. C. Hammond, Director.
No. 6—Gilman, F. I. Mann, Director.
No. 7—Centralia, J. Webster, Director.
No. 8—Alton, J. S. Browne, Director.
No. 9—Odin, J. G. Vaughan, Director. (Mr. Vaughan has since resigned).

In view of the uncertainty of securing funds for the work, the only step taken at this meeting, was to instruct the Secretary to procure trees and cions of promising new varieties of apples from Illinois, Kentucky, Arkansas and Missouri, of which he could get definite and favorable information. In pursuance of these instructions, about thirty varieties were collected and planted or grafted at each of these stations.

Early in May our appropriation bill had so far advanced that we were confident of its final passage, the President, therefore, called a meeting of the Board at Normal on the 15th, to perfect the plans for prosecuting the work.

At this meeting it was decided to appoint a committee of three, one from each horticultural district, to take charge of the work. The Secretary, Arthur Bryant and J. S. Browne were named as the committee.

The following rules and regulations were adopted for the government of the stations:

WHEREAS: This Board having established experiment stations for the purpose of carrying out an act of the Legislature, appropriating one thousand dollars annually for experiments in horticulture, it becomes necessary in order to carry the work on in a systematic manner, that certain rules and regulations be adopted governing these experiment stations; therefore,

Resolved, That the following rules be and are hereby adopted for that purpose:

RULE I. The experiment stations shall be nine (9) in number, located in equal number in the three horticultural districts of the State. Each station shall be in charge of a person designated by the Executive Board of the State Horticultural Society, and shall be known as Director of station Nos. 1, 2, 3, &c. The Directors shall hold their positions until their successors are appointed.

RULE II. Experiments shall be undertaken at these stations under, and by authority of the Executive Board, or a committee of the Board appointed for that purpose.

RULE III. A committee of control shall be appointed at the annual meeting of the Board, consisting of the Secretary of the State Society, and two members of the Board, whose term of office shall continue until their successors are appointed. No two members of this committee shall be from the same horticultural district. The Secretary shall be chairman of this committee and call meetings at such times as are deemed necessary.

RULE IV. The Directors of stations shall report to this committee and work under their direction. This committee shall direct experiments authorized by the Executive Board and incur necessary expenses within the limits of the appropriations made by the Board for that purpose. All purchases shall be made through this committee.

RULE V. No member of this committee or Directors of stations shall receive a salary, but actual expenses incurred under authority of the Board will be paid. The Executive Board shall audit all bills, but the Secretary may issue orders, countersigned by the President, for incidental expenses, authorized by the committee, whenever it shall be deemed necessary.

RULE VI. Records of experiments made and undertaken, and all expenses incurred, shall be carefully kept by each Director of a station and records made of same in books provided for that purpose by the Secretary. Directors of stations shall make annual reports of experiments made and undertaken at their

respective stations, on or before the first day of December of each year. These reports shall be sent to the Secretary and by him carefully compiled for use at the annual meetings of the Society, or for publication in the annual reports. Partial reports shall be made from time to time when required by the committee having charge of the experiments.

RULE VII. All plants, utensils, &c., purchased for the use of the several stations shall be the property of the Society and subject to the control of this Board, except in case of new varieties of plants and trees submitted for testing by originators or owners, which shall be subject to such conditions as shall be agreed upon.

RULE VIII. The Secretary shall, in a book provided for the purpose, keep a record of all expenses incurred, plants, &c., purchased and distribution of same by stations; together with a record of all meetings of the committee of which he is chairman. He shall keep a separate record with each station of all experiments undertaken and made.

On the 16th of May the Committee of Control held a meeting of which the following is the Report:

The committee met at the Sweeny Hotel in Normal. Present the full committee.

On motion, it was ordered that the members of the committee have special charge of the work in their own districts, and that such experiments as may seem practicable in spraying and summer mulching be immediately undertaken.

On motion, it was ordered that Mr. Browne be authorized to buy such strawberry plants as may be desirable to plant next fall.

After considerable informal talk, it was decided that under existing circumstances, it would not be practicable to lay out any elaborate plans. The committee, therefore, adjourned.

On the 24th of September the committee met at the National Hotel in the city of Peoria. Present, the full committee. On motion, J. S. Browne was elected clerk.

After an extended discussion it was decided to have the following varieties of Russian apples tested at all the stations: Yellow Transparent, Red Wine, Early Champaign, in the Northern and Central Stations; also, Hibernal, Repke, Romaneske, Antonovke, and Winter Oporto.

It was also decided that the following varieties of plums and pears be tested at all the siations: Plums—Rolling-Stone, Cheeney, Desoto. Pears—Tyson, Josephine-de-Malines, Duhamel-du-Monceou, Souvenir-du-Congress, and Keiffer.

It was the unanimous opinion of the committee, that the Directors of the various stations should meet at Hamilton at the time of the annual meeting to arrange a uniform and definite plan of action for the ensuing year.

I compile the following report, of the work of the various stations, from the books of the Directors:

STATION NO. 1, ARTHUR BRYANT, DIRECTOR.

The new varieties of apples above referred to were planted, or grafted in the tops of large trees, and a number of strawberries planted. The following orchard experiments are also recorded: Having twenty to twenty-five young Duchess Apple Trees that were just coming into bearing I decided to see what effect the application of manure would have on them, or rather a portion of them. These trees were near together and enclosed with an old orchard. But the ground where they were planted had never been planted in orchard before, but had been in grass for two years. I applied five good loads of manure to eight of the apple trees. Eight of the other trees, of about the same size on each side of those manured, were used for comparison.

The manure was applied the twenty-fifth of May, 1889. As the summer was a moist one, with a reasonable supply of rain, there was no appreciable difference in the crop of apples, and at the present time (September 1st) I do net see that the manure has had any effect.

STATION NO. 2, J. V. COTTA, DIRECTOR.

The report of this station is much like the preceding, with the additional fact that he set the cions in hardy nursery trees, and now has quite a number of trees ready to go into experimental grounds. He also budded a number of Okaw Plums, which are doing well.

STATION NO. 3, C. W. PRESCOT, DIRECTOR.

The only work done at this station has been the planting of the new apples and strawberries above mentioned.

STATION NO. 4, H. M. DUNLAP, DIRECTOR.

After giving the list of new varieties of apples planted and grafted, and new strawberries planted, which is about the same as at the other stations, Mr. Dunlap refers to the following experiment in summer mulching:

Having theee rows of Snyder Blackberries, the third year from planting, on the first of July I hauled on ten loads of coarse strawy manure, and covered the ground four feet on each side of one row, leaving the other two rows with bare culture. The rains during July were so constant that the rows not mulched did fully as well as the others. On November 1st, hauled two loads of manure to each tree in a row of Willow Twig apples, trees set in blue grass sod. Manure spread broadcast as far out as the branches extended.

Mr. Dunlap also reports planting on the twenty-sixth day of November, nine varieties of Russian apples, four of pears and

three of native plums, About the same list has been sent to all the stations, and either planted or heeled in for spring planting.

STATION NO. 5, A. C. HAMMOND, DIRECTOR.

The experiments undertaken at this station were more extensive than at those heretofore mentioned. Thirty varieties of new apples were grafted in the tops of bearing trees, and twelve varieties of yearling trees planted.

Two varieties of new pears, seven of plums and five of Russian apricots were also planted. With very few exceptions, these trees have lived and made a good growth.

Twenty-six varieties of strawberries have been planted, all of which have made an excellent growth, and therefore are in good condition for fruiting next season.

Eleven kinds of blackberries were also planted, only about half of which lived. They made a fair growth, and will probably show some fruit next season.

At this station, the question of spraying with insecticides for curculio and codling moth, and fungicides for apple scab, plum and grape rot, was given attention.

For the curculio experiment, four plum trees, about twelve years old, which stood near together, were selected, which will be designated as numbers one, two, three and four. Number one was sprayed on the third of May with twelve pounds of salt and four ounces of London Purple, to forty gallons of water; May 10th, with a solution of one pound Sulphate of Copper, one and one-half pints of Ammonia and four ounces of London Purple; May 25th and June 11th, sprayed with the same solution as May 10th. A careful count on the twenty-fifth of August, showed fourteen per cent. of the plums stung.

On the third of May, the second tree was sprayed with a solution of four ounces of crude Corbolic acid and four ounces London Purple, to forty gallons of water; on May 10th, 25th and June 11th, it was sprayed with the same solution as number one. On the twenty-eighth of August, eleven per cent. showed the mark of the little Turk.

Number three was sprayed the same date as numbers one and two. The first three times with the London Purple mixture (four ounces to forty gallons of water), the fourth; a combination mixture (Sulphate of Copper, Ammonia and London Purple). This tree, August 25th, showed seventeen per cent. of stung specimens.

Number four was left unsprayed as a check tree. On the day that the count was made on the other trees, nearly all the fruit was on the ground, and not a single plum could be found unstung. The result of the experiments were practically the same, as all were the means of saving enough fruit to make a

full crop. But the difference of six per cent. in favor of the carbolic acid treatment, and three per cent. in favor of the saline mixture, seems to indicate that the curculio is repelled by disagreeable tastes and smells. The combination mixture was applied, hoping it would prevent "rot." The fruit on the sprayed trees was nearly exempt, while on the check tree not a sound specimen could be found; but as part, or all, of this rot may have been caused by curculio injury, I do not consider it a fair test.

On the dates above mentioned, May 3rd, 10th, 24th, and June 11th, three rows of pear trees (about thirty in a row) were sprayed. The first time one row was treated with the saline mixture, one with carbolic acid, and the third with the London Purple solution. The three succeeding applications were with the combination mixture.

A careful examination on the 23rd of August showed an appreciable difference in the condition of the fruit on the three rows, all being remarkably fine, almost entirely free from codling moth, and only ten per cent. stung with curculio, and eight per cent. disfigured with scab. The check tree showed ten per cent. infested with codling moth, eighteen per cent. stung with curculio, and twenty per cent. marked with scab.

On the same date a five acre apple orchard, nine years old, was sprayed, the first time when in full bloom, with London Purple, four ounces to forty gallons of water. The second, third and fourth times with the same combination mixture as the plum and pear trees. On the 8th of October 1,000 apples were examined, from ten different portions of the orchard, with the following results: The first 100 showed five wormy specimens, the second, three; the third, five; the fourth, six; the fifth, five; the sixth, eight; the seventh, seven; the eighth, nine; the ninth, four; the tenth, eight; an average of six per cent. The fruit had so nearly all dropped from the check trees, caused by insect work, that it was impossible to make a comparative count. As a preventative of scab, the treatment was not satisfactory, although there is, no doubt, but some benefit was derived from it.

The first spraying did not injure the leaves in the least, but the last scorched them so badly that about one-third dropped from the tree. The weather was hot and the sun shining brightly when the last spraying was done, which may have caused the injury. Or is it a fact as some claim that late in the season the leaves are more easily injured than in early spring?

To test the efficacy of the Eau Celestia mixture for "grape rot" a vineyard of four rows was selected, and the first and third rows sprayed four times, on the 3d, 10th, and 24th of May, and the 11th of June. At gathering time the sprayed rows showed a loss of twenty-five per cent, and the unsprayed sixty per cent. This experiment (as well as many others of the same kind,) shows

that this disease which has caused such fearful loss to grape growers, can be in a measure, if not entirely, controlled by the intelligent and proper use of fungicides.

From what I have seen of the effect of the Bordeaux mixture I am of the opinion that it is more effective when used for grape "rot" and possibly for apple scab, than the Eau Celestia mixture, but it clings so persistently to the stem of the apple, and grape, and shows so plainly among the berries of the latter, as to greatly injure their appearance, and I think it quite possible that sulphate of copper and lime may not prove to be a healthy diet. But no doubt we will yet learn to so prepare it, that this objection may be overcome.

On the 30th of May and the 1st of June I mulched an acre, of a nine year old orchard with straw, using sixteen loads on a heavy crop of clover, covering the entire surface ten or twelve inches deep. The apple crop was very light, scarcely a tenth of a full crop and I did not expect any results this season, but the hot dry weather of August and the first half of September caused apples to drop badly, when the good effect began to appear. And when the fruit was gathered the last of September, the mulched trees yielded thirteen bushels of picked apples while the same number of trees, equal in every respect, standing by their side only yielded seven bushels, the balance being on the ground. This, however, is an incidental benefit. But if, as many of us think, drouth, lack of cultivation and starvation are the principal causes of the deterioration and death of our orchards, we here find the remedy for them all.

If this experiment is persistently followed up at least at one station in each district and its influence on the growth and health of the tree; retarding blooming; increasing or preventing insect depredations; the quality and general appearance of the fruit as well as causing it to cling to the tree, carefully noted, a fund of information may be gained that will be of incalculable benefit to the Pomologists and farmers of the State.

STATION NO. 6, F. I. MANN, DIRECTOR.

Apple trees set in the spring of 1889: Ellis, Arkansas Black, Sims, Black Twig, Dark Red Seedling, Light Red Seedling, Ozark, Elkhorn. These have all grown, and most of them have made a good growth and ripened well, and are in good condition for winter.

Varieties top grafted: Glendale, Woodmansee, Babcock No. 4, Babcock No. 3, Wetwood, Wilkinson Seedling, Jordan's Seedling, Jones Seedling, Babcock No. 7, Trumble Co. Beauty, Babcock No. 5, Duncan, Johnson Seedling, Coffelt, Babbit, Carson, Belleflower Seedling, Nero, Leeper's Beauty. These have all made a good growth and have ripened their wood well, except Duncan, Babbit and Nero, the latter making the largest growth. (This

list of varieties is nearly a duplicate of that found in all the stations.—Secretary.)

Strawberry plants: Bubach No. 5, Haverland, Pearl, Warfield, Miami, Eureka, Daisy, Viola, Crawford. Nearly every plant has grown, and seems to be in good condition to test as to fruit in a small way next spring.

STATION NO: 7, J. WEBSTER, DIRECTOR.

In addition to planting and grafting the same list of apple trees and about the same of strawberries as the other stations, three of the highly recommended new peaches, Thurber, Wheatland and Chinese Cling, were planted.

STATION NO. 8, J. S. BROWNE, DIRECTOR.

After giving the list of apple trees planted and grafted, Mr. Browne makes the following report:

Experiment with Sulphate of Copper for Grape Rot.—The proportions used were nine pounds of sulphate of copper dissolved in twenty-seven gallons of water, and thirty pounds of quicklime in six gallons of water. After the lime had cooled it was thoroughly mixed with the copper. The mixture was put on the vines with a Eureka Sprayer. The first application was made soon after the growth had started, say about two inches of new growth; the second, when about one foot of new growth had been made; the third, just about the time the first blossoms opened: the fourth, when the grapes were about the sixteenth of an inch in diameter; the fifth, when the grapes were about the size of peas. In addition to this the vines were carefully gone over and all the rotten grapes picked off twice when the grapes were the size of peas or larger. The first rotten berries appeared a few days after the spots on the leaves (which always go with the black rot) showed themselves, which was when the berries were the size of peas. In picking the rotten grapes it was noticed that when a leaf was found spotted, rotten grapes were almost invariably found near it.

The vineyard experimented on contained four hundred Concords with Wordens scattered through, one hundred Moore's Early and one Pocklington. Last year nearly seventy per cent. of the grapes in this vineyard rotted, the greatest loss being in the Concord. The Pocklington all rotted outside of a few bunches that were bagged; the Noah mildewed in the bunch; Moore's Early, very little rot. The product from the five hundred vines was about two hundred and forty ten-pound baskets.

This year the Pocklington and Worden were entirely free from rot; the Noah free from rot or mildew; the Concord rotted not to exceed five per cent.; Moore's Early not more than three per cent. The product of the same vineyard was about eight hundred

ten-pound baskets. I think better results would have been obtained had I sprayed the vines, posts, and every thing as soon as the vines were tied up and before growth started, and also had the fourth spraying been done just as soon as the fruit had set instead of waiting later.

The cost of material used on this vineyard was seventy-five pounds Sulphate of Copper, at seven cents per pound—$5.25; two and a half days' labor, at $1.50 per day—$3.75; total for the five hundred vines, $9.00.

On the other side the putting on of this application is a very disagreeable job. The lime does not lose all of its caustic properties by mixing it with the copper and more or less of it gets on the person, and while wet with the mixture a very little rubbing takes the skin off. The rain does not take all of it off and some of the bunches look as though they had been whitewashed, particularly the stems of the bunches. If a less quantity of the lime would decompose the copper it would be better.

REPORT ON STRAWBERRIES FOR 1889.

Capt. Jack, the best for market, so far very productive, medium size, good shipper, good quality, a seedling of the Wilson and an improvement on it owing to the large amount of fruit set, only a moderate grower, it requires a very rich soil; when the conditions it requires are given, no berry in the hundreds tested have given so large a return. Sharpless has out-lived its usefulness. Bubach has again proved itself the most productive of the large berries; its greatest fault is that it is a little soft for a market berry, not of the best quality. Lida deserves to be more extensively tested; very productive, berries above medium, last berries as large as the first, only a moderate grower, firm, not of the best quality. Jessie, very much over-praised. Gandy, very late, strong grower, large size, good shipper, good quality and for so large a berry, productive. Mammoth, worthless. Monmouth, a few very large, very early berries, but not enough to be worth the trouble of growing. Jewell, so poor a grower that it is of no value for any but the amateur. Jucunda, rusts so badly that it is no longer of any value. Cohanzick, worthless. Garibaldi, worthless. Haverland, very productive, strong grower, good quality, a little soft, but in a test to see how long a number of varieties would keep in good condition the Haverland at the end of five days was in perfect condition all the others were rotten at the end of three days. The fruit stalk is too weak to hold the load of fruit. It must be mulched. Berry medium to large and holds its size to the last. Gold, nothing remarkable about it; late, good size, fairly productive, good quality but only a moderate grower. Cumberland, too well known to need describing. Burt, do not think this is Capt. Jack under another name, while it is similar to it in growth and bearing qualities it is not nearly so large growing

side by side. Great Ontario is so near like the Sharpless that for all purposes they are the same. Louisa, Hampden and Pineapple do not show any qualities that would make them worthy of farther trial. Pearl deserves a farther trial. Cloud, too small and unproductive.

STATION NO. 9, J. G. VAUGHAN, DIRECTOR.

Mr. Vaughan planted and grafted the same list of new apples previously referred to, but when later in the season he learned that it was the intention of the Board to test the different small fruits, he resigned as he was not prepared to engage in that kind of work.

Dr. Humphrey—I make a motion that the President appoint a committee to thank the decorators of the hall.

Carried. A. L. Hay, W. H. Green and Henry Speer were appointed.

Mr. Riehl, of Alton—I think our Experiment Committee is on the right track, but I think it is too early for us to make any criticisms of their work. I think, however, that the work is properly begun.

Secretary Hammond—The committee will be glad to hear suggestions.

Mr. Shank presented a petition protesting against spraying trees until after the bloom has fallen.

Mr. Pearson moved that the petition be referred to the committee on Experimental Stations.

Carried. Adjourned.

WEDNESDAY AFTERNOON.

HORTICULTURAL OBSERVATIONS.

BY IRA COE, QUINCY.

The first observation is that on my farm there has not been a large crop since 1880. I have the old Wilson variety. Other strawberry growers in the vicinity of Quincy have had varied success; some have made money occasionally from the Downing, others from the Crescent, and all are trying more or less of the new varieties that prove to be defective in some way.

The following are some of my observations on the nature and character of the strawberry: A great many are healthy in foliage

and prolific in plants; some lack vitality and will not do well unless the weather is suitable and they are planted in congenial soil; many varieties have an abundance of large fruit; others have a large berry, but are shy bearers, while many are too tender in bloom and plant.

I have known the strawberry to be winter killed. When killed the crown turns black, and the bloom, when it comes out in the spring, is black before the petals are opened.

I know of only one or two varieties that are sure to bear the first year after planting. Usually the second year we have the best crop.

The first season of growth most varieties seem to exhaust their vitality in producing plants, the fruit buds being imperfect in development. This is especially true with stamnite varieties.

The cause of imperfect fruit in 1889 was a dry fall, winter and spring, and a heavy frost followed by four or five days of heavy winds.

When fruit buds are properly developed take the crown of a plant, strip off the leaves downward to the roots, and the last leaf taken away will show the miniature bloom just ready to come out.

I notice that when we have good growing weather for wheat, grass and clover in the fall, this is just what we need for a good crop of berries the next season. Water is the best manure for the strawberry, and land can be too rich in nitrogen as well as too poor for want of it.

The Experiment Stations could do no better thing for the berry grower than to devise some way to cheaply saturate the sub-soil with water, thus to bridge over the dry spell, especially in fruiting time.

We observe the best soil for the strawberry is an alluvial mixture of clay and some sand, with good drainage for the surface, with sub-soil completely permeated with water—water so near the surface that by digging three or four feet anywhere it can be found. If there is too much sand the capillary attraction will not be sufficient to bring moisture to the surface. Alluvial soil is good without this sub-irregation, but this kind of soil can only be found in low ground. A man having such ground can positively make strawberry growing a success, if he makes it a specialty. The only drawback is that late frosts in the spring are apt to be more severe than on high ground.

Such men as Mr. Crawford, of Ohio, and other strawberry specialists are aware of these facts, and any new strawberry being introduced which originated in such soil, under such favorable conditions will most surely be a failure when planted on high, dry ground.

To illustrate: In 1887 my brother and I sent to Mr. Bubagh for his No. 5 strawberry. I planted on high, dry bluff land, rich and

good. My brother planted on his sub-irrigated land—all were well cultivated; result—I had scarcely any berries on the plants left for fruit, while my brother had plenty, and five times as many plants besides.

So when you invest in strawberries, find out, if possible, on what kind of soil they have been grown to produce such wonderful results as advertised. If, like the Jessie, they were grown near some lake, on rich sandy loam with water near the surface—away up north in Wisconsin, where nights are cool, and where celery, cranberries and huckleberries flourish, be careful how you invest,—such strawberries will not thrive here in Central and Southern Illinois, on our high, dry land. Strawberries originated east are a failure here.

Strawberries can be too thick as well as too thin in the matted row. Strong growing kinds, like the Warfield No. 2, should be planted about like corn, say, three feet one way and four feet the other.

The Warfield No. 2 seems to be, so far as tried, the most satisfactory of any new variety. But where is the stamnite variety, equally as good to go with it as a polenizer?

To make money in strawberry growing, we must have an early variety to successfully compete with the old Crescent. I observe that many large farmers, near our large cities, are growing, or trying to grow, strawberries for market. It is hardly possible for them to grow large, fine fruit; hence we have a surplus of small berries (the large quantities of which spoil the market for good berries). In short, it would be best that such quit the business and attend to their regular farm work. They would find just as much money in something else, and on the other hand I have found, from costly experience, that the regular fruit or berry grower should not try to grow oats, wheat, corn, hay or barley.

If the berry grower has these crops to look after, the berries are sure to be neglected right at the most critical time, when every one is busy with haying or harvest, and no extra help can be hired.

No Horticultural Society should encourage Tom, Dick and Harry to engage in fruit growing for market by publishing in the books, papers or circulars, accounts of enormous yields of fruit, and big money for the same.

The nurserymen anxious to sell their products, their catalogues so full of choice fruit-trees and plants, with glowing descriptions, are calculated to excite and mislead the uninitiated.

The tree agent is another source of fabulous falsehood concerning the profits of fruit growing for market.

The cultivation of the strawberry can be made very simple and easy by the use of the cultivator-harrow.

I tried the wheel hoe, in the berry patch, this last spring; there is so little to do with the hoe after using the harrow, I didn't like it.

We find in fruit growing there is no "excellence without great labor." And yet we have no use for too much of the "main strength and awkwardness." The proprietor must know just how to do this kind of work so that hired hands can be properly instucted. Too much "putter" or "fussy particular" will not do. In fact if we are close observers and examine the subject of growing the strawberry for market in all its bearings, we find a great field for thought and reflection. There is so much in it that I suggest the following definitions for your consideration: Strawberry culture is a science and an art. As a science, it treats of the nature, relation, properties, classification and propagation of strawberries, nature and character of the soil and conditions of the climate or weather. As an art it treats of the planting, hoeing, cultivation, picking, boxing, assorting, marketing and the application of the money when you get it, to practical purposes.

I observe a few, who planted largely of the Snyder blackberry when first introduced, made money. I, too, have made money on some fruits which were new to the locality and for which there was a lively demand. My observations lead me to believe that for the horticulturist to make money he must be wide awake, be the first to plant largely of anything new that is an assured success, be sure the conditions are favorable as to the climate and soil and that there is a good demand for the fruit when grown. Plant largely too, of the old standard, reliable varieties of fruits of all kinds. In short, we must be well posted, send for and read all the Nurserymen's Catalogues we can get, compare one with another and try a little of whatever seems to be most promising. If you fail don't curse the propagator, for he is as apt to be fooled as any of us. Converse with people from all parts of the country about fruit. In fact, to be "first in war, first in peace," first in the cause of trying to make your head help your hands, and "first in the hearts of your countrymen," we must join the State Horticultural Society. I observe that black raspberries are more liable to summer killing than winter killing; that lack of moisture in sub-soil will cause the side of canes toward the sun to dry up completely and become lifeless. Weeds too, are a great thing to kill out or starve out, black raspberries. Raspberries or blackberries will ripen earlier on high land than on well protected, well drained, alluvial low ground. Blackberries, though they grow well on low ground, are more liable to be winter-killed. A good way to fix Blackcap Raspberries is to tie the bearing canes out from between the rows with short pieces of binding twine to the main stalks in the center of the row. With us the Turner red raspberry takes the lead for hardiness, all others being more or less tender.

I notice that land once covered with oak timber, or timber land generally, is better for fruits than prairie land. Timber land will grow higher colored and better flavored apples, and bright red apples sell the best.

It is a fact, gentlemen, I never had nice apples, plums, strawberries, or anything nice in the fruit line but what I could have sold as many more had I had them. Dealers like to handle large lots of nicely grown fruits of all kinds.

The "coming" apple, of a bright red color, to take the place of the old Ben Davis, is bound to come from the south. To have a good crop of apples the "off" year we must have a large variety. A good plan to keep up the orchard is to plant some trees every year and to plant some of the new kinds of red apples. Plow the orchard in the fall to catch all the water possible in the sub-soil. We can cultivate an orchard too much as well as not enough.

We observe that insects were very numerous this season and took entire possession where unmolested. I am now almost convinced that insects are the cause of more scabby, knotty, rotten apples, and more rot in peaches and tender skinned plums than all other causes combined. Peaches rotted badly this year because the insects stung them and the moist, hot weather prevented the wound from healing or drying up. My neighbor, Mr. Chase, had a few plum trees of what he called the Jefferson or Lombard varieties (greenish purple with some blue bloom, and sweet like the California plum). These trees hung very full of plums at first, but as the season advanced they commenced falling off,—"rolling" as he said. At the time of ripening I called to investigate and found but few perfect plums on the trees. The rot, I think, was certainly caused by the stings, bites, or punctures of insects, as all the rotten fruit on the ground which we examined had a worm. The rotten ones on the trees hanging close together showed signs of insects having crawled in between, made a sort of harbor and stung the whole cluster. I observe that to have fine, large, Wild Goose plums the trees should not be too close together, and the ground beneath and around should be clear of brush, weeds and trash, then spray with *London Purple*. I am more thoroughly convinced than ever that it is a bad plan to have peach, plum or apple trees in a raspberry or blackberry patch. Peach trees standing in the patch bore no fruit, while on those just outside there was plenty.

To cheat the birds out of their share of grapes we must grow the white varieties. The idea of pruning, cultivating, pinching, tieing and working with a vineyard three years for one crop of grapes, to sell for about two cents per pound, is surely discouraging.

There is a man living near Golden, in Adams county, who has a cave for an apple cellar. Late in the spring when the market is quite bare of fruit we see his Willow Twig apples for sale at the stores; fresh, crisp and good. Remember: castle in the air, castle in the ground. I have had it in mind for some time that the best plan for a fruit cellar, or cold storage, would be to dig on top of a ridge close to the side of the hill a deep pit or cellar

30x40 feet (or as large as desired), and 20 feet deep. Connect the bottom of this with a good sized sewer pipe to the bottom of the hill for drainage and to let in cool air—the longer this pipe the better. This from Fruit Grower's *Journal:* Have a good wall on all sides, build a cider house or packing room on top with a tight floor, leaving a place for an elevator. Have two floors in the cellar, both made of narrow plank laid open. In such a cellar we would have a cool, moist, uniform temperature summer and winter, and in my opinion just as good as cold storage for keeping apples or any kind of fruit from rapid decay. With such a cool place we could pick berries of all kinds on Saturday, keep over Sunday, and have them in prime condition for Monday morning sales.

In conclusion, gentlemen, please "shoot at the bunch" as I have tried to do. My great desire would be to have the observations, in brief, of all the members of this Society on fruit growing. We must go on experimenting and investigating until we are practically independent of California, or any other state, for all kinds of fruits which can be grown in the temperate zone.

VINEGAR MAKING AND THE NECESSITY FOR A VINEGAR LAW.

BY L. R. BRYANT, PRINCETON.

Vinegar is defined as diluted acetic acid, and as it is legitimately produced, is obtained by the fermentation of fruit or vegetable juices, which, originally or by reduction, contain saccharine matter or alcohol in the right proportions, to form acetic acid enough to give vinegar of proper strength.

It is, therefore, made from a variety of substances, such as malt, molasses, sour beer and wine, waste honey, sorghum skimmings, and some economical housekeepers even have a jar into which they put apple cores and peelings, grape skins, drainings of molasses jugs, yeast, and sour fruits of all kinds, and from which they extract what they think is fine vinegar. But the most of the vinegar used in this country is obtained, ostensibly, from corn and from the apple. That obtained from corn and called Alcohol, Whisky or White Wine Vinegar, is made by first distilling a low grade of alcohol, and then reducing it to the right strength for fermentation. Vinegar made from the apple is called Cider or Apple Vinegar, and of course in its purity is made by the fermentation of cider.

Acetification, or the making of vinegar, is produced by exposure to heat and air, and the different processes are only different ways of doing this. The old-time process of making Cider Vinegar, and not obsolete yet, by any means, is the filling

of casks two-thirds full of cider, and leaving them in a warm room with the bung out.

Then there are the high tub generators, filled with beech shavings, through which the vinegar material is allowed to drip slowly. This process is used by most Alcohol Vinegar makers.

There is also a new plan of close reversible generators, claimed to make a stronger vinegar, with less waste of material, than in the old way.

Between Alcohol and Cider Vinegar, there is perhaps little choice, as far as wholesomeness is concerned, when both are properly made, but when it comes to richness, flavor and pleasant aromatic qualities, Cider Vinegar stands far ahead. Alcohol Vinegar is used by pickle manufacturers, ostensibly because it is of greater or more even strength, but really, probably, because it is the cheapest; but for domestic purposes, did you ever hear of any one educated to use *good* Cider Vinegar that did not prefer it to any other, ever afterwards?

Under these circumstances, one would naturally suppose, in such an apple-producing State as Illinois, and especially in the great fruit-growing sections, Cider Vinegar would be used almost exclusively. Yet I have it on high authority, that right here in this section, where we are now holding our annual meeting, that less than ten per cent., and probably not over five per cent. of the vinegar sold is pure Cider Vinegar. And yet the same authority estimates that 100,000 bushels of apples went to waste in this county in 1888. The same condition of affairs may be found all over the State in a greater or less degree. Apples rot on the ground whenever there is above an average crop, and the sale of pure Cider Vinegar is very limited.

I think I am not far out of the way, in estimating, that of the vinegar sold in Illinois for domestic purposes, three-fifths or sixty per cent. is sold as White Wine Vinegar, and the other two-fifths or forty per cent. is sold under the name of Apple, Fruit or Cider Vinegar, all of it claiming to be Cider Vinegar. Now if a quarter of this two-fifths, or ten per cent. of the whole, is Pure Cider Vinegar and the other three-quarters is spurious, see what that means. Three-fourths of the people who buy and pay for Cider Vinegar get an imitation article, liable to be an injurious one also, for manufacturers who adulterate in one way, may in another. Then, again, the makers of pure Cider Vinegar are cheated out of three-fourths of the trade they ought to have, and even more than that, for I am sure that if good pure Cider Vinegar could be had for a certainty when called for, the demand would be increased to one-half of the whole amount used, if not more. Think of it! Manufacturers of pure goods cheated out of four-fifths of their legitimate trade! Three-quarters, or more, of the consumers who desire Cider Vinegar, have palmed

off on them a cheap imitation article, or a compound of drugs, injurious or even poisonous!

Perhaps you think I am exaggerating the amount of adulteration and its injurious results. Let us see what others say.

First, I quote an extract from a letter in the Chicago *Tribune*, dated April 3rd, 1889:

"A bill is now pending in the Legislature of this State to prevent poisonous adulteration or foul mixtures of the vinegars placed on the market of this State. These spurious and vile imitations are composed of water, coloring material, with various organic and fermentative substances, rendered sour by the addition of sulphuric acid. This acid is a poison to the stomach, corroding its coats, creating an irritation, and a confirmed dyspeptic is the result. In view of these facts why are our legislators indifferent and ignore the bill? Can it be that they are unfamiliar with the nature and action of these slow and injurious poisons? Or can it be that the adulterators' money is the vile bane to human health and hapiness?"

Corroborative of these assertions is an extract from the Milwaukee letter to the Chicago *Daily News* of Nov. 14, 1889: "It was asserted that impure and poisonous vinegars were being made in Milwaukee, and that the manufacture was to be stopped. Nothing has been done, and the presumption is that poisonous vinegars are being manufactured still and the manufacturers are safe from prosecution. Local chemists here recently made a test analysis of four samples of vinegar, and an extract from their report is as follows: 'Out of four samples of vinegar recently purchased in Milwaukee, and submitted to us for examination, one was found to approach somewhat the genuine article, not, however, being as represented, pure Cider Vinegar. Three were found to be manufactured from sulphuric acid and water, one being colored to resemble cider vinegar. These were all represented to be the pure article; and, in one case, the purchaser was informed that it was unadulterated and an exceptionally pure vinegar. This was one which was made from sulphuric acid, commonly known as oil of vitrol, a highly corrosive poison, and contains many impurities, among them arsenic and lead. Even when highly diluted this acid destroys tissue, and when taken internally it corrodes and destroys the stomach and the mucous surfaces of the internal organs. It may require many months to accomplish this, but it acts surely, even if slowly. Any arsenic which may be contained in the acid is of course taken into the system. Thus we see the danger arising from using these compounds sold as vinegar.'"

A prominent horticulturist in an adjoining State, whom all of you know by reputation, and most of you personally, a man careful in his statements and a close investigator, writes me: "I have found only one barrel, not made in this county, that was Cider

Vinegar, most of it being made of sulphuric or muriatic acid. Comparatively little is made in this county." And, again: "I don't know so well about your State, but if one tenth of the vinegar sold there for domestic use should be found true to name, I should be surprised."

The following is from the report of the Food and Dairy Commissioner of Minnesota, where they have just put a vinegar law in force, giving the result of an analysis of vinegars in Minneapolis: "Of fifty-five samples sold as Cider Vinegar, eleven were pure, thirty-one were colored low wine vinegars, containing in some instances a small proportion of apple solids or cider vinegar, nineteen were below the legal limit of acidity. Of the colored low wine vinegars a considerable number were branded" —well, I will not state here what—but there were two brands, the sale of which has been pushed in this State.

In regard to the character of the vinegar sold in our own State it is not necessary for you to accept my statements, or that of others, just visit the grocers in your own town and obtain samples of imported vinegars and test them yourself, and if the result does not surprise you I am much mistaken.

Now you will notice that two kinds of fraudulent vinegar are spoken of in these reports, one colored alcohol or whiskey vinegar, and the other sulphuric acid vinegar. Do not misunderstand me. I do not charge that all imitation Cider Vinegar contains sulphuric acid; indeed, until lately, I did not believe it was used to any considerable extent, and even now, probably the larger part of the spurious Cider Vinegar is Alcohol Vinegar, colored. Nor do I assert that these imitation goods, unmixed with injurious acids, are necessarily unwholesome. The fraud is bad enough as it is; the consumer is entitled to receive the kind of vinegar he calls and pays for.

This is a matter of vital importance, not to Cider Vinegar makers alone, it concerns the orchardists as much, and the reasons are very apparent. An increased demand for pure Cider Vinegar will necessitate the consumption of large quantities of apples that are now allowed to rot on the ground, and in these late years, when so much of our fruit is imperfect, the utilizing of the second grades of apples, often makes up the difference between a loss and a profit to the orchardist.

Railroad freights have been so reduced on cider apple stock that when one section is short they can be shipped in from other points cheaply, and it only requires the securing to Cider Vinegar makers, their rightful trade, to put thousands of dollars into the pockets of fruit growers for what is now, in many cases, a waste product. By reference to the report of the Secretary of this Society for 1886, you will see that he estimates only forty-three per cent. of the entire apple crop of this State was marketable. An explanation of the causes of this state of affairs in the

vinegar market may be interesting. To give this we must go back ten years. Previous to 1879, makers of Alcohol Vinegar, were obliged to buy tax-paid alcohol from the regular distillers. This prevented any injurious competition with Cider Vinegar. About that time, however, some of the Alcohol Vinegar makers obtained the passage of a law, permitting the manufacture of a vinegar by the vaporizing process, in which is distilled a low grade of alcohol, or low wines, supposed to be of too low a strength for any use except vinegar making. This is allowed to be done without any government supervision except the chance visits of Internal Revenue officials.

It was soon found that this opened the way for fraud in giving a chance for making high wines and smuggling them on the market, and some firms were not slow to work this gold mine. Under this new system vinegar was made so cheaply, that soon the market was overstocked with alcohol or "White Wine" Vinegar, and so quantities of it were colored, branded, and sold as Cider Vinegar. Efforts were then made by distillers of high wines, and Cider Vinegar makers, to obtain a repeal or some modification of this law, but they were unsuccessful.

Later, matters have grown worse, competition has been so great that the quality and strength have been lowered, until now quantities of acid vinegar are sent out. You can have no idea, without investigation, how much of this absolutely poisonous vinegar there is on the market. I confess I had not begun to realize it until recently, and the more I look the matter up the more I am convinced of the extent of this iniquity.

Recourse has been had in New York, Massachusetts, Connecticut and other States, to State laws regulating the manufacture and sale of vinegar, and while I do not believe in making special laws to regulate every little wrong, I do believe that the only way to regulate this particular evil is through our State Legislatures, and I also believe that this whole matter of adulteration of foods, will in time, and of necessity must, be regulated by law. Our State has at this time a vinegar law, but it is inoperative, as no provision is made for enforcing it.

The vinegar laws of New York and other States prohibit the manufacture, sale or exposure for sale of all acid, poisonous or injurious vinegars; of vinegar below a certain strength, and the branding or sale of any vinegar as Cider Vinegar, except such as is entirely the product of the juice of the apple. The enforcement of the law is placed, in some States, in the hands of the Dairy Commissioner, and in others in Vinegar Inspectors, appointed by the cities. There is nothing in these laws to interfere with the legitimate manufacture of wholesome vinegar, and the effect has been good wherever such laws are enforced. A correspondent in Connecticut writes me that the "new Vinegar Law is doing much good; I do not know of any

vinegar other than Cider Vinegar being sold in this part of the State."

In New York, I am informed that the first law passed was deficient, and was amended last winter, and is not in full operation yet, but still, "There has never been so little spurious vinegar on the market as this season."

An attempt was made at the last session of our own Legislature, to have such a law enacted in this State, but, owing to causes which it is not necessary to specify here, the bill was killed in the committee to which it was referred, and never came to a vote.

A law of this kind would protect not only the horticulturist, but the orchardist and the Cider Vinegar maker. It is of vastly more importance to all consumers, which of course means the whole community. It would protect the consumer from paying full price for half strength, or for vinegar which was hurtful to the health. It would protect the honest retailer, who desires to handle "straight goods," from the competition of those who handle the inferior article. It is, therefore, not a matter of class legislation which we are considering—it affects the health and pockets of the whole community.

Of course there will be the old worn-out cry of "monopoly" by the monopolists themselves, which the Cider Vinegar men are supposed to be trying to establish, and so put up the price of vinegar; but that is so foolish an argument, and so easy to dispose of, that it is not necessary to waste much time on it. Sulphuric Acid Vinegar is dear at any price. No one will buy and use it knowingly, and it is a crime to force it on any one without their knowledge. The sale of good, pure vinegar, under its proper name, is not proposed to be interfered with. Why, then, should Alcohol Vinegar makers oppose the passage of this proposed law, which will not interfere with them in the manufacture of their legitimate product, branded and sold under its right name?

The fact that they do oppose it so strongly, proves that the coloring of their vinegar, and branding and selling it as Cider Vinegar, is a very large part of their business. All the "White Wine" Vinegar men would have to do then, would be to make a pure article, brand and sell it under its real name, and convince people that it was as good or better than Cider Vinegar.

But this paper is growing long, and probably tedious. I have aimed to be careful in my statements, and give only facts susceptible of proof; now the question is, "What are you going to do about it?" Are you going to sit still and submit to having this State made the dumping-ground for all the poisonous, inferior vinegar which the laws of other States will not allow to be sold there? Are the people in this State to submit longer, to be cheated, swindled and poisoned, just to fill the pockets of

unscrupulous men? Are the fruit growers going to look idly on, and be robbed of a market, for what in the best of years is a large proportion of their crop? If not, it is time to be stirring. Our next Legislature will meet a year from next January, and it is none too soon for this Society, as a body and as individuals, to take action. The endorsement of such a movement by the Illinois State Horticultural Society, will give it a prestige which it could perhaps attain in no other way, but this must be followed up by active work to reach success. A concerted, individual action is what will tell finally. Nothing influences "our member" so much as a little practical talk, or a letter from a constituent.

The Cider Vinegar men will be on hand and, undoubtedly, will make the fight alone, if necessary, but their opponents will have the biggest odds and will make hot work against the cider men alone, but the latter with the assistance of horticulturists are sure of winning if the work is properly organized. "What are you going to do about it?"

DISCUSSION.

After reading his paper Mr. Bryant remarked—I have some samples of vinegar here with which I might make some experimental tests, if it is desired. Society moved to see the tests. Mr. Bryant, taking two test tubes, proceeds: I have here two samples of vinegar; one of them is pure cider vinegar and the other is doubtful. The test is what number of grains of soda an ounce of the vinegar will neutralize. The more citric acid the more soda it takes to neutralize it. I have the soda here in liquid form and putting it in the tube with the vinegar I note to what degree on the tube the contents are a pink color. You see that in the pure cider vinegar I have put in much more of the soda than I did in the other and yet its color is not changed. This weaker vinegar was sold as a pure cider vinegar, but it is not up to the standard of strength of any State having a vinegar law. Now I will give you a test for sulphuric acid which is found in many vinegars. I put vinegar in this tube and then introduce a small quantity of chlorate of barium, and if sulphuric acid is present the contents change to a milky white and there is a deposit of sediment. You see this weak vinegar becomes milky, which shows that it contains sulphuric acid. In a little while there will be sediment at the bottom. The better vinegar is still clear and would not give any sediment.

Mr. Budlong—Have chemists found that there is always something injurious in the white wine vinegar?

Mr. Bryant—I do not know that there is anything injurious in white wine vinegars, if they are properly made, but what we want is a law to see that all vinegars *are* properly made.

Mr. Williams, of St. Louis—The question of strength can easily be tested by the user; can the user also readily detect the sulphuric acid?

Mr. Bryant—I suppose you can readily obtain the chlorate of barium at any drug store. The test is easily made with it.

Mr. Webster—I think it would be well for this Society to recommend to the Legislature the desirability of a law to protect us against spurious vinegars. I therefore make a motion to recommend the enactment of a vinegar law to prevent the manufacture and sale of sulphuric acid vinegars.

Mr. Leeper—These recommendations have been before the Society before, but we want to get this question before the people. Everyone who knows anything about it knows that nine-tenths of the vinegar sold by the groceries as cider vinegar is not cider vinegar at all.

Prof. Ragan—That was a valuable paper, both from a sanitary and an economic standpoint. We know that people buy these compounds in the market because they are cheaper. I am glad that the question has come up and hope that your laws may be so amended as to be fully operative and benefit us all.

Mr. Hay—I want to say that I am down on all new laws. I know that our tobacco laws have made many boys want to smoke, and I know that many of the whisky laws have made men take to drinking. I am in for the enforcement of what laws we have, but I don't want any new ones.

Mr. Patterson—I know people of whom I asked ten cents a gallon for good cider vinegar, and they just laughed at me because they said they could get good vinegar for five cents a gallon.

Mr. Budlong—I have heard the remark made that this question has come before the Legislature several times and has been referred to a committee and gone no further. I desire to say that one reason why it has gone no further is that the farming com-

munity has been asking for too much. It may be well enough to ask for a law against adulterated vinegar, but it is useless to ask for a law against wine vinegars.

President Dunlap—The motion before the house was not for the suppression of wine vinegars, but against the adulteration of vinegars. Motion carried.

REPORT ON GRAPES.

BY A. H. WORTHEN, WARSAW.

Seeing my name on your program as one of the Committee on Grapes for 1889, I presume I shall be expected to say something. But while appreciating the honor, and thanking you for the same, I do not understand just why you did it, when there are so many larger grape growers than I am. I really do not feel competent to "wrestle" with a subject so much bigger than myself, and when anything has gotten away with me as effectually as grape growing has, I do not like to take my revenge by "going around and talking about it," and I am so much more accustomed to the use of the "plow share and pruning hook," I exchange them for the pen "with fear and tremble" as to the result. While it is true, considering that I have been a "laborer in the vineyard" for over twenty years, that I should know "something about" grapes, I am really astonished, when I think of the amount of information that has been poured into me during that time, how little I know. And when that is spread over this great field, you will find it "decidedly thin." Perhaps in this as in political appointments, "locality" had to be considered. In that case, I assure you that you made no mistake, as my "locality" is without any doubt the "paradise of the fruit grower." You will not consider this extravagant praise, when I tell you that last year there were more than two hundred wagon loads of Ben Davis apples grown here. Most of them were marketed, as the producers had an abundance of other vegetables that they preferred for winter use.

I never expected to have an opportunity to "talk back" at you, so I will take advantage of this call, to do a little skirmishing around the outskirts of your encampment before I "open" on you with "grape." But if I should attempt to "get even" with the fraternity, for what I have suffered in that direction, I would occupy the entire three days of your meeting. I have no fruit to sell, as a party did at one of your meetings that I attended several years ago, and who, unfortunately, was on the program to "open the battle" on the morning that I was present. "I was a stranger and they took me in," and seated me near the platform, and I afterwards discovered that the "reserved seats" were nearest the

door, and were occupied by all the old members of your Society, who seemed to have considerable outside business to attend to. While I have fully recovered, I can never forgive you for what I suffered on that occasion. Like an alarm clock, he had been set to "go off" at a certain hour. He made a big racket, and when he was done all that we knew more than when he started, was, that it was time to go home. The lady members sat gasping and holding their smelling bottles, the gentlemen holding theirs with "nary smell" left, and I, with the perspiration streaming from my face, and wishing I had brought my gun. I do not see this "silvery tongued orator" here to day. And "you don't have to tell" what you did with him. But noticing his absence, I fully realize that when a person inflicts a long winded article upon you, that life with him is very uncertain, and he should be prepared for the worst. Wherefore I think it safer, thus early in the entertainment to "thank you for your liberal patronage and kind attention."

I first became interested in grape growing "way back in the forties." Among my large library of Sunday School books, was one containing a picture of two figures of extraordinary muscular development, tottering along the road, carrying a pole, on which was hung a single bunch of grapes. Although there were no affidavits from prominent horticulturists that it was an actual photograph, and that it was the only bunch on the vine that two men could carry, I believed it, and was seized with a desire to grow something like it. Before we shed our fine feathers, we are apt to swallow everything offered us. But from subsequent experience, I am certain that it was taken from the illustrated catalogue of some enterprising nurseryman of that period, who had a new seedling he was selling his neighbors. How many times since have I taken the same old bait. The dollars I have spent in buying new and untested varieties; how I wish I had them back again, so that I could invest in some of those just introduced.

For the past eight or ten years, grape growing has been a very precarious means of making a living, and never again will we experience a "grape boom" like that of '65 and '66, when lawyers, doctors and merchants planted vineyards, expecting as soon as they came into bearing to retire from business, and pass the remainder of their days spending their income in "having fun." Then every grape grower was a millionaire—"in his own mind."

About this time the Concord was introduced. The praises of the Iona and Isabella were being sung from one end of the land to the other, and parties pushing these varieties, claimed that the Concord was "unfit to eat" and would not make wine when ripe. These are no longer heard of, while the Concord has been the most popular of all. It has been such a favorite, that, no doubt, five times the amount of money has been sunk in planting Concords, than in any other variety. But few of the many seedlings placed upon the market every year prove of any value

for general planting, and are only grown for the sake of variety. There are one or two seedlings of Elvira being tested, that are both good wine and table grapes, and almost rot proof. The Etta, especially, shows many good qualities. With nearly every new variety, colored plates mis-representing the grape are sent out, some of them looking like a bunch of bananas. But it is seldom that I have been able to grow a bunch equal to the pictures, and instead of requiring two men and a pole, one small boy has gotten away with the largest of them without any difficulty.

If I were appointed a committee of one to tie the "blue ribbon" on the "champion liar," I would pass by all the old soldiers, fishermen and hunters, and tie it on some of the introducers of new fruits, and for once, I think, there would be no "kicking" over the award.

The past season has been one of the most disastrous to the grower, and one of the most favorable to the development of grape rot within my experience. The rot has been so universal that even the newspapers were full of it, and grapes, except where protected by paper sacks, or treated with rot preventatives, were an entire failure. We used, at the Golden Bluff Vineyards, this summer, as a rot preventative, the Bordeaux Mixture, six pounds Sulphate of Copper and four pounds Lime to twenty-two gallons water, using the "Eureka Sprayer." I went over my vineyard seven times, doing the work myself, so that I know it was thoroughly done. I went over them the first time, about a week before the buds opened, and afterward once every ten to twenty days, until the grapes began to color. Three or four times within twenty-four hours after I finished, we were visited by drenching rains that washed off most of the mixture, but I fought it with good success, until the middle of July, when the grapes were about full grown, and the bunches so compact that only the *outside* of the bunch could be reached with the Spray, while the rot Spores would get *inside*.

Saturday, July 13th, was a cloudy day, extremely hot and sultry, succeeded by a week of hot, muggy weather, with frequent showers. Previous to this we had had two attacks of rot that I checked at once by spraying. I noticed the first indications of the third attack on the following Monday, and by the 20th of the month the loss at the Golden Bluff Vineyard was from fifty to sixty thousand pounds of grapes, the Concord showing less resistance to it than any of some thirty varieties.

In my own vineyard, I succeeded in saving about 8,000 pounds of Concords, 3,500 pounds Norton's Virginia, 1,000 pounds Herman, and some 9,000 pounds of fruit on many other varieties. In an ordinary season, I believe a crop of grapes can be saved by spraying, and in this unfavorable season, it proved a sure preventative of mildew.

In 1888, while we had no Concords that escaped the rot, good crops were grown in other localities, under equally as unfavorable conditions, by the use of the rot preventatives, and I am confident that the experiments being made under the directions of the Department of Agriculture, will give us something better.

My expense, including labor, for treating about seven acres, was sixty-five dollars. The crops in the other vineyards near us were an entire failure, so that we feel somewhat encouraged, although the results have not come up to our expectations. But for that matter, they never do. The grape grower, like "Pip," always has "great expectations." He has but little else to "brace him up." Without that, life would indeed be to him a "dreary waste." If he has anything else at harvest time, it is something he has caught from the neighbors. He "rises with the lark," "works, as well as sprays," during the day, and at night "sleeps the sleep of the innocent" that he is. But he is a "stayer." You'll find every one of them just where they started, but with more experience and less hair. While I have lost much of my affection for my first love, it still clings to me and squeezes me tighter each succeeding year and it is a question whether I have the vineyard or it has me. I realize, when too late, that the greatest mistake of my life was, that when I was "discharged" from the army I didn't "go off" in some other direction.

But are not the fruit growers, as a class, "grievously affected?" I often wonder why it is that we have almost every thing on our trees and vines except fruit. The horticulturist not only has worms, but a great many other things to make him unhappy, such as sun scabs, borers, curculio, rot, rust, blight, the bark louse, the gall louse, fleas, and an endless list of noxious insects and diseases. And last, but by no means least, the traveling "tree agent." He, like the poor, we have always with us. His mission on earth seems to be to lead the "coy and unsuspecting granger" astray. He not only "sticketh closer than a brother," but if you patronize him, sticketh harder. Remove the tape worm "from our midst," and there is nothing so hard to get rid of as the agent.

I add a few notes made during the ripening season. The first to ripen with me is always the Hartford. While many are said to ripen earlier, none do. It is closely followed by Moore's Early, which, though of better quality, is not productive enough. Nearly all the other varieties ripen about the same time as Concord, or within a few days of it. Vergennes, one of the new grapes, is of very good quality, red, with a tough skin like a plum. It no doubt will be a valuable keeper. Oriental, a seedling of Catawba, with same color and flavor, larger berry. Peter Wylie, medium-sized bunch, sometimes double-shouldered, being same size and flavor, identical with the Deleware; color, white. Eldorado, of the finest flavor, white; bunch, large;

berry, medium; a beautiful grape. Duchess, almost identical with the above. Empire State is of very fine quality, white; bunch, long; usually shouldered, productive. It is difficult to believe that a grape of this character can be the offspring of two such parents as Clinton and Hartford, both black and inferior. My Lady Washington is spurious, but have eaten the grape which lacks flavor, and is neither as handsome or desirable in any respect as the last three. Jefferson ripens after Concord some eight or ten days; a good-sized, handsome bunch; color red, with good, but peculiar, flavor. Niagara did not bear; believe it spurious. Brighton, large, copper-colored; large bunch; excellent quality; reliable. Bacchus is a very poor Clinton. Etta, a seedling of Elvira, white; bunch and berry, medium; good quality; an improvement on the parent. Pocklington, a large, thrifty, productive white grape; one of the most reliable of the white grapes; quality better than its parent (the Concord). Woodruff, a handsome, red grape; bunch, medium; berry, large; quality only fair, but I think it will prove hardy. The older grapes, such as Salem, Massasoit, Senasqua, Elvira, Delaware, Nortons, Cynthina, Herman and Martha, have done fairly well. Dracut Amber is handsome, but worthless, and I should imagine it to be of extremely aristocratic parentage. Skin tough, of a catty flavor, that none but people of the most intense "feline" tastes can appreciate.

It is best when one wishes to grow grapes for home use, to plant only the old, well-tested varieties. If you *will* invest in the new, high-priced novelties, buy only of the originator, or old-established nurserymen. Even then you will not always get them true to name, as the latter are themselves often victimized. When you buy a new grape, you will, when it comes to bearing, three times out of four, regret that the seller didn't substitute a Concord for it. And thousands of them are sold every year for new varieties, at from seventy-five cents to one dollar each. But when you find a nurseryman that will do this, his name is never "Dennis." Perhaps it will be in the hereafter.

REPORT OF COMMITTEE ON GRAPES.

BY GEO. W. ENDICOTT, VILLA RIDGE.

Mr. President and Members of the Illinois Horticultural Society:

Our worthy Secretary has called on me for a report on grapes from Southern Illinois. In complying with his call I want to say that Southern Illinois is a large territory for one man to make a report on, so that any thing I may offer will only include Pulaski County, and only that portion of said county that is designated as God's Country.

The growing of grapes at this place has assumed quite generous proportions in the last few years. The acreage is now about three hundred and fifty acres, and one hundred acres more will be planted next spring, with a strong probability that the planting will continue. The quantity as well as the quality has been improving in the last three or four years. Growers are fast learning the condition and requirements of the vines necessary to success, and of course are applying them.

The black rot, that scourge of many grape growing countries, seems to be disappearing from this place, at least it has been growing less and less destructive for the last three or four years, until this year there was no rot on our standard sorts, such as Concord, Worden, Catawba, Ives, Perkins, Cottage, Elvira and Norton. Some one may say, "Oh, you had a favorable year for grapes and that is the reason there was no rot." Now that may be a fact, but if it is, all our former ideas are overthrown in regard to what constitutes a favorable year for grapes.

It rained on forty-two different days from June 7th to August 2d inclusive, and many days it rained all day and all night; mercury at 75 to 98 degrees and the vineyards just reeking with hot vapor day and night for sixty days during almost the entire period of growth. This state of the atmosphere has been considered the best possible for fungoid disease to get in their most effective work, but strange as it may seem we never had so fine a crop in quantity and appearance, and the quality was number one on almost every variety we had in bearing here, (about ninety varieties). The greatest part of the crop sold as market grapes; about five hundred tons were shipped from Villa Ridge alone, besides those shipped from other stations. A considerable quantity was also sold in local markets and made into wine, and almost every grower was well pleased with the crop. Many growers sacked a part of their amateur collections, and when done in time this is a sure preventative for black rot and keeps them in fine condition for exhibition purposes, but it will not pay for the general markets.

Of course I am expected to say something about spraying with some of the copper solutions as recommended by scientists and experimenters. I have only used two of the preparations, the first was the copper and ammonia as sent out by the authorities at Washington; this I applied every seventh day after the blooming was over till I made four applications. This I am sure would prevent rot. The ammonia burnt the foliage on the Aestavelis or Hybrids, but did not harm the Labruska foliage, but it left some smutty streaks and spots on the fruit that spoiled its appearance.

I would not recommend this preparation when we can get the Bordeaux mixture; this I used in the same manner as the above on another lot of vines of the same varieties, with no bad effects

on foliage or fruit so far as I could see. I feel sure this will prevent rot. As I have some Telegraph vines that rot every year, I gave one vine five sprayings with the Bordeaux mixture, and the adjoining vine I did not spray; there was not a sound grape on this vine except six bunches which I had sacked early; they were fine, and the vine sprayed had not a] rotten berry on it. If anything could be conclusive by one year's trial I think that would.

It may be expected that I will say something about varieties; this I must respectfully decline, as each locality must find out by experience what will suit them best. I will say, however, that many of the new kinds are very promising here. And my honest belief is, after visiting nearly all the grape exhibitions in the Mississippi valley for the last ten years, that Villa Ridge can eclipse any exhibit grown between the Rocky and Allegheny mountains.

Next in order was the election of officers, which resulted as follows:

President—Jabez Webster, Centralia.
Vice-President—H. L. Doan, Jacksonville.
Secretary—A. C. Hammond, Warsaw.
Treasurer—H. K. Vickroy, Normal.

The President announced that the next business in order would be the location of the next Annual Meeting. The Secretary read the following invitation:

To the Members of the Illinois State Horticultural Society assembled at Hamilton—Greeting:

On behalf of the fruit growers of Southern Illinois in general, and Villa Ridge in particular, I heartily extend to your Society a special invitation to hold your next Annual Meeting at Cairo, Ill. I think our people will make it pleasant for all visitors to the uttermost parts of "Egypt", and if we fail to show you the "Queen of Sheba" you can at least say that you have been to a country where one little railroad station can load and ship fifty car-loads of tomatoes in one day, and another one makes a daily shipment of forty tons of grapes, while Cairo is ready to show you the longest steel bridge in the world. To say more would be superfluous, so after my best wishes to your Society I will again kindly invite you to come.

GEO. W. ENDICOTT.

Mr. McKinney presented an invitation for the Society to hold its next meeting with the Marshall County Society, at Lacon.

After considerable discussion, a ballot resulted in the choice of Cairo.

WEDNESDAY EVENING.

FLOWERS—THEIR INFLUENCE AND ASSOCIATIONS.

BY MRS. F. L. FULLMER, HAMILTON.

Mr. President, Ladies and Gentlemen of the Illinois State Horticultural Society:

The realm of flowers is as varied and infinite as its blossoms are fragile and evanescent. And while we leave to the Botanist the analysis, classification, habits and functions of plant life, and to the Committee on Floriculture the instructive dissertation upon that branch of the subject, we propose simply to *touch* upon the influences of these refining messengers of nature, and the tender associations connected with them. Some one has styled the flower "a living creature with histories written on its leaves and passion breathing in its motion; a voice rising from the earth; a new chord in the mind's music." Born of the inspiration of this poetical idea of the flower, are the humble thoughts we garland together this evening. It would be a voluminous task to exhaust the subject under which we write, and so we must be content with exhausting our audience. We find that flowers are associated by ancient custom with the most entrancing tales of genius, the richest essence of poetry. We find them consecrated in all ages to our religion, our fancies, and even to our superstitions. They are also symbols of the flowers that bloom in the garden of the heart; flowers purifying life, expanding the soul, and drawing more closely the bonds of nature to the human heart. Through their mute influence lessons of purity are unconsciously taught, and untold pleasures are conveyed. To the flowers we owe our ardent love of bright colors. We have a distinct, childish recollection of looking forward to a time when we might wear a dress stamped with variegated "Touch-me-nots," a hat plumed in "Princess Feather," and a parasol, modeled after an immense Sunflower; which at the present day would be stunningly esthetic, not to say Oscar Wilde-ish. Nor have we, in all the years that have intervened, been able to tone down that love born of the flowers, the love of color. There are those in the world who ardently admire the brilliant hues of a flower,

who are charmed with a gay plumaged bird, or a gorgeous sunset, and yet are ready to lift their hands in holy horror at sight of a lady adorned with a bright ribbon, a gay feather, or a dress of some vivid color. We are free to confess that in the matter of color we were wont to deplore our *taste* as being at fault, until we came to read the profound opinion of Ruskin, on the subject. He says, "The fact is, we, none of us, enough appreciate the nobleness and sacredness of distinct colors. Nothing is more common than to hear it spoken of as a subordinate beauty; nay, even as the mere source of sensual pleasure, while the fact is that of all God's gifts to the sight of man color is the holiest, the most divine, associated with profound and noble thought." So much for the wisdom of Ruskin.

We find that the love of color, by which "Beautiful Venice, the bride of the sea," is known above all other cities in Italy, was not granted her in the days of her reckless festivity. Her resplendent vestments of purple and gold were given her when first she rose in all her majestic purity from the sea.

The coat of many colors was the touching symbol of Israel's love to his chosen son. 'Tis said of Fra Angelica, the celebrated artist, a man pure in heart and life, that his pictures were like rare pieces of jewelry, and the colors of his draperies as rich and various as those of a painted window. The other extreme is recognized in Salvator Rosa, a study of whose character reveals the fact that he was given to dissipation and revelry, and that his pictures seemed to borrow from his life the same gloomy shades of color. At last we come to think that not to the coarseness of plebian tastes but up to the rainbow hues and down to the flowers may we trace this sacred love of color.

As the eye grown dim with age, falls tenderly upon a tasteful knot of old-fashioned blossoms, the soul is carried back, by the power of associative imagination, to the scenes of childhood. Back to the humble cottage or the pioneer cabin. There are the treasures of a mother's well kept garden, called by their old-fashioned names. The border of Pinks, the Marigolds, the Touch-me-nots, Holly-hocks, the Bachelor's buttons, with rich little clumps of Johnny-jump-ups weaving their bright Mosaic hues among the rest; the whole made odorous with Sweet Brier, Sweet Basil and Old Man. With this fragrant day-dream from the Spice Islands of the Past is wafted memories of youth, and bright eyes, and festive scenes, and ripples of laughter. Too soon the vision changes, and the air is filled with a mournful fragrance which speaks of blight, of disappointments, of desolation, and of buried hopes, waiting to be called from the dust of the tomb, to the splendor of Immortality.

Can we not each recall some sacred, voiceless influence, some tender dreamy association connected, it may be, with a bunch of Pansies, or of Forget-me-nots, a withered Rose, a spray of Mig-

nionette, or, perchance the oppressive odor of a Tube Rose, bringing back the flower-laden casket and the icy "touch of a vanished hand?" Through such influences the rough nature is softened and subdued, the finer sensibilities are touched.

We have among our treasures, the remains of an old-fashioned Cinnamon Rose, tacked on a slip of letter paper, every petal has dropped away, only the stem and the heart of the rose remain; and yet, that sacred souvenir is fragrant with the memories of twenty-five years ago, when a home-sick girl-wife, living among the lovely hills of Iron Ridge, Wisconsin, received a letter, and found enveloped in its folds, this rose that had bloomed under the window of her old home in Illinois. As she kissed the sacred blossom, and inhaled its fragrance, the magic wand of fancy was touched; the little room in which she was sitting faded from her sight, and she was spirited away to her girlhood's home. Old associations came thronging up; the limpid waters of the brook gushed and bubbled at her feet; the birds were singing in the maples; the bees were humming in the garden; the dear home voices, it seemed, had grown more musically sweet than ever before. Time flew on rosy wings; moments sped into hours, when, lo! she was telephoned back to this mundane sphere by the familiar interrogation, "Say, how long before dinner will be ready?" "Bless my soul, is it noon? Why I've been 'way down in Illinois, just got back. Can't we manage with a lunch now, and take the banquet later?" While thus the flowers we cherish to-day with tenderest care, may wither and perish to-morrow, yet the associations connected with them, and their pure, sweet influences are the immortelles we carry in our hearts through life. Mrs. Hemans sweetly tells the story of a dying girl, from which we quote this passage:

"Mother, be comforted that now I weep no more. God hath purified my spirit's eye. And in the folds of this consummate rose I read bright prophecies. I see not there, dimly and mournfully, the word 'Farewell' on the rich petals traced. No; in soft veins and characters of beauty I can read—'Look up! look heavenward!'"

"Blessed God of Love! I thank Thee for these gifts, the precious links whereby my spirit unto Thee is drawn! I thank Thee that the flowers of earth *higher* than earth can raise me! Are not these but germs of things imperishable that bloom beside the immortal streams? And, oh, by what strange spell is it, that ever when I gaze on flowers I dream of Music?"

T'was the angel of the flowers, through the starry eyes of the Pansy, that made beautiful the life of the sickly weaver, Hugh Sutherland. Poor Hugh! friendless and lame, apprenticed to the loom, how cheerless the outlook, until, to use the language of the poet, "Heaven took the task upon itself, and sent an Angel down among the flowers." A few sickly Pansies first at-

tracted his attention; nursing and watching them in his leisure moments, he came at last to love their velvet eyes better than human things. And soon with Pansy growing came the taste for Botany, and with the knowledge of Botany came fame, and honor, and higher than all, a reverence for the Great Botanist who sent the voiceless Pansy on its holy mission of love.

Years ago, in a city not a hundred miles removed from Hamilton, a lady was standing at the open window of her princely home, when her attention was attracted by a little child, whose bare feet and scanty garments betokened her poverty. The child was gazing with intense admiration upon the paradise of flowers spread before her. A rose tree, with one choice, creamy bloom, seemed to charm her most, and with an assurance, strangely in keeping with her humble appearance, she stepped inside the enclosure, advanced to the window, and said, "Please, lady, may I pick that big white rose?" "Why, the idea of such impudence! Indeed you cannot pick the choicest flower in my garden," replied the lady. And, without making any conciliation for her brusqueness, she saw the child move away with crestfallen look, and eyes brimming with tears. She was scarcely out of sight, however, before the woman's "good angel" began to chide her. Pleading eyes and "phantom footsteps" haunted her all day. "You might have filled the little faded apron with flowers, and the hungry child's heart with rapture, whispered reproving Conscience."

That night, in troubled sleep, the proud woman dreamed of her lost Daisy, a precious human flower, who, years before, had been transplanted in the land of fadeless bloom. Strangely, the vision pictured *her* darling, standing, with bare feet and worn garments, *outside* "The Beautiful Gate," not asking for admission, but only for one of the myriad roses that deck the heavenly bowers. To her humble request, the angel guarding the gate made answer, "Child, go back to Earth, and ask your mamma for the White Rose she refused the little orphan yesterday." Startled by this dream so real, the mother awoke, only to be followed another day by the same picture of sorrow. Anxiously she watched for a glimpse of the child, that she might make some amends for her rudeness. At last an opportunity offered; she saw her passing and with a cry of delight exclaimed, "Come here darling, you *shall* have the big White Rose, and a whole basket of lovely flowers beside." The thin lips quivered, tears streamed from her eyes as she answered, "I don't want any flowers *now*, mother's dead, she could'nt see them; I wanted the rose for her. Yesterday they covered her up under the ground, and now they are going to bind me out. Will it hurt me to be bounded out?"

Need we say, they *didn't* bind her out, Heaven had given that Creamy Rose, a sweet mission of charity, through its voiceless

influence, a woman's proud heart, was stirred to its profoundest depths, and the homeless one found a sacred refuge in that bosom, which proved a source of mutual happiness, in after years.

"If thou hast crushed a flower,
The root may not be blighted;
If thou hast quenched a lamp,
Once more it may be lighted;
If thou hast bruised a vine,
The summer's breath is healing,
And its clusters yet may glow,
Through the leaves their bloom revealing,"

In conclusion, we ask, who among us would separate the flowers from all the myriad associations that are round about them? Who decry their influence upon the human heart? Surely not the voice of human love; surely not the nature delicately tuned to the finer symphonies of the soul. Rather let us render reverence and praise to "Nature's God" for the bright realm of flowers, the humblest blossom of which is so skillfully touched with his unrivalled pencil.

Not without meaning are the lines of the Irish poet:

"Long, long be the heart with such memories filled!
Like the vase in which roses have once been distilled.
You may break, you may shatter the vase if you will,
But the scent of the roses will hang 'round it still."

OUR NATIONAL FLOWER.

C. N. Dennis—On the 12th day of April, 1861, a shot was fired at Fort Sumpter to destroy that flag. That shot struck at not only that flag, but at the hearts of thousands of heroic boys in blue. There was a certain number of stars in that flag at that time, but after four years the flag was left untarnished, and now others have been added until the number is forty-two. In the discussion to-night as to the national emblem, there is a difference of opinion as to what that emblem should be. Some think that it should be a single flower, and others want a boquet. I have been requested by two ladies of Hamilton—Mrs. Lamonte and Mrs. Railsback—to present to this Society, in the name of the City of Hamilton, this wreath of forty-two distinct flowers, representing our idea of what that emblem should be. And it gives me great pleasure to present to you this wreath emblematic of their idea.

President Dunlap—On behalf of the Society I accept this wreath from the ladies of Hamilton, and especially thank those

two ladies who prepared it. It is certainly a piece of beautiful workmanship. The beauty of the flowers is enhanced by the art of the ladies. Again I thank the ladies in the name of the Society, and accept it for the Society.

Mrs. Lamonte then read the following paper:

Mr. President, Ladies and Gentlemen:

In presenting the following argument in support of the "combination" as the national floral emblem, I am filled with diffidence, born of a knowledge of my inability to properly present such proofs as I have:

Yet trusting you will accredit me with a desire to do my duty in the matter, I will, with your attention, proceed to outline the argument. For the sake of convenience we may divide it into two parts:

1st. Why the floral emblem should not be a single flower.

2nd. Why it should be a combination.

1st. Why it should not be a single flower. What law compels us to have a single flower for a national emblem? Whence comes the idea of a single flower? Does it spring from American patriotism; or is it in emulation of the old world example? If so, would it not be well to caution our people as to its advocacy?

The old world is fathering too many ideas now, which are being copied by our people, and in designating the character of our national emblem, let us be purely American and as free from the trammels of European sentiment, as were our forefathers a century ago. To those who would copy from Europe, let me put this question: When something over a century ago, Otis, and Patrick Henry were electrifying the people of the colonies with their passionate eloquence, in favor of revolt,—there was born an idea, *Patriotism.*

Was it borrowed from Europe? Later, when the British were driven from our shores, and we formed the idea of having a Republic, did we model after Europe? Did we go to Europe for our flag? and let me ask, is the "bald headed eagle" a native of the old world? Does any state in Europe or Asia have such a motto as *E Pluribus Unum?* Ah, no! the sentiment is foreign to monarchial governments. It is American, of American soil, and American inspiration. And shall *we*, at this late day, declare our poverty of idea, prove so recreant to our American thought as to urge as our floral emblem a single flower, because other nations have so adopted?

Why, the single flowers of European states are symbols of *hate*, *superstition*, *blood*, *tyranny*, and many of the baser passions which are incompatible with American ideas and thought. England's rose, born of *hate* and baptised with *blood*, tells of a fratricidal war; the sacred lily of the Chinese unfolds to us the

dense superstition of his land; the lotus flower symbolizes the mystic philosophy of Egypt; and the "Fleur de Lis" of France is abandoned by all the advanced republicans of to-day as a symbol of liberty.

Shall we, then, in view of these quoted facts, emulate Europe in the matter? Can we readily concede that our floral emblem should be a single flower, because all the European nations have a single flower? How cheap, how inglorious is such an argument.

Another great objection to the single flower idea, and one which will prove a bristling wall of opposition is *State pride*. It may be urged in opposition to this statement that our pride should be suppressed in the matter, but it can hardly be allowed as a point in the discussion, because of this accepted precept, while we are a homogenous people considered as a nation externally, internally considered, the relation of the States to the nation are decidedly Homologous.

In view of this fact it is absurd to ask the States to surrender their pride when one or many of their sister States are clamoring for national recognition in a matter equally pertinent to the State or States asked to keep *silence*. Negligent, indeed, would be the State that would not by every honorable means seek aggrandizement in any matter that would shed such honor alike upon her escutcheon and her citizenhood.

Who is there in our State who does not share the honor of his selection with Melvin W. Fuller? who does not feel proud that this man now occupying the most eminent position among his country's officials, was elected from the yeomany of American citizenship? Who blushes with shame for their State pride when Lincoln's greatness is named; who hang their heads when the brilliant Douglass is quoted; who trembles with guilt at the name of Grant and Logan, now glorifying history's page and worn in the hearts of all? And what Illinoisan would bury his State pride, and not strive to place among the honored emblems of his country a floral emblem from Illinois? And yet we are only one of many. The citizens of our sister States would be, and are, equally anxious to secure this honor.

This State pride is a fact; it may be a question in ethics, if it be right to indulge in it, but our province is to discuss the character of the floral emblem, and not violations of the ethical or moral code, and when facts are presented they should be weighed carefully, that we may determine judiciously. And, as before remarked, it is a fact; it exists, and will be a mighty factor in the contest (if our national emblem is to be a single flower) that will be long and profitless.

Already in the field as candidates for the honor, are some sixty blooms, and the one which wins the victory must take the *palm* from many handsome favorites. It would have to outride in popu-

lar estimate the claims of the Arbutus of the New England States; it would have to wrest victory from the Orange blossom of Floridian groves; from the coral-blossomed Cypress, with its tendrils draping in living Arabesque, the stumps and trunks of trees of southern swamps; from the Honeysuckle, which adorns, with its fragrant blossoms of pink and white, the home of the aristocrat and the home of the peasant; from the stately Magnolia that sheds its perfume in glen and grove; from those desert children of the southwest, the *Cacti*, whose thorny spines and grotesque leaves bespeak *not* to the traveler the beauty of their blossom; from the Rhododendron that waves its pink plumes in the brakes of the northwestern wilds; from these and many others will the champion be forced to wrest victory.

Why it should not be a single flower. I do not wish to be thought pedantic, and yet at the risk of being so considered, shall ask you to pause with me sufficiently long to consult a dictionary on the meaning of the word "emblem."

Says Webster of this word: "Emblem, a picture, representing one thing to the eye and another to the understanding. A painted enigma, or a figure representing some obvious history; instructing us in some moral truth.

"Second, emblem, a painting or representation intended to hold forth some moral or political instruction; an allusive picture; a typical designation."

These definitions are not obsolete, they are extant, and by *them* are measured all the emblematic tokens of the time. The flags of the nation are designed in accordance with these meanings, and the insignia of all social orders in Christendom are allusive representations of a truth but partly expressed.

The initial which we jot down at the foot of the notes which we daily write, as well as the monogram that adorns the corner of the sheet, are in keeping with the terms of these definitions. With a definition accepted and acted upon so universally as this one is, may we not, with perfect propriety, use it as the means whereby to judge the emblems of our country, now in use, and such others as may in the future be adopted?

With this as a guiding means in studying our flag and seal, we learn that the emblematic truths expressed are mainly political, relating to our ability as a nation; three thoughts being prominently brought forth—namely, *plurality*, *strength* and *unity*.

In analyzing the flag, we obtain the following results: *Plurality* is indicated by the collective number of stars and stripes; *strength* by the stars held in the firmament of blue and the stripes joined together; *unity* by the stars and stripes in their entirety as the national flag; teaching to the world our motto, "*E Pluribus Unum!*"

On our national seal the same cardinal truths are found—*plurality*, *strength* and *unity*. In the numerous arrows clutched

in the eagle's talons, we read the thought, *plurality;* in the talons which clutch them in a bundle, we read *strength*, and in the motto near the outer edge of the seal, *unity*.

From the foregoing analysis of our standard and seal, it requires no great powers of discernment to see that in the coming floral emblem, in order that it may rank as a compeer with existing insignia, it must give expression to that trinity of truths which so clearly express our estimate of the *union*, *unity*, *strength*, *plurality*.

These then being the thoughts which our floral emblem should convey, the question arises as to the capability of a single flower expressing them. In proving that none have as yet been found, it will only be necessary to hastily examine the qualifications of such flowers as are figuring prominently before the people for this honor.

The simple Golden Rod and the many hued Aster claim the characteristics necessary to show plurality, but these claims will not stand intelligent criticism, if Webster's definition is to be adhered to as a guide, inasmuch as they lack the ability to impress the beholder with the truth they wish to convey. Though the Botanist and student may see in the bloom of the Golden Rod a collection of individual blossoms, and in the Aster, petals differing in order, yet to the great bulk of our countrymen whose unscientific minds are unused to Botanical analysis, these blossoms will be but a single flower expressing nothing save the sentimental fancy of a thoughtless people.

Of the other aspirants for this honor, the Trailing Arbutus, that vagrant of the rocks that fights for life with the chilly winds of a New England spring; the stately Sunflower, that follows its god from east to west; the ox-eyed Daisy, the Violet, that borrows its color from the skies that it constantly seeks; that pet of the flower-garden, the Pansy; of these nothing can be said individually in favor of their candidacy, possessing no properties which would fit them for its occupancy, they would soon disappear from the race were it not for the *unthinking sentimentality* of those people who press them forward. The summer past evinced the fact that little hope may be held for the ultimate supremacy of any single flower.

At the fairs, recently held throughout the country, polls were opened and votes recorded of the favorite flowers as cast, with sixty candidates in the field. The battling of ballots was necessarily heavy but not decisive, the results being in line with the argument advanced in the first part of this paper,—that *state pride* will actuate the *mind* of the voter, man being *prone* to *favor* that with which he is most familiar; which in this case would be the flower of his garden, his glen, or native prairie.

Thus we are led to believe that no plant will be found in the

United States whose blossoms will contain all the requirements necessary to eligibility for this position.

At this point we will, for the sake of brevity, close our argument on this issue and consider the single flower in the last possible position which is left open to it as a candidate,—that of an historical emblem.

Were there in our country one blossom that had connected with it some historical romance, pertinent to the history of our country, it might consistently be voted a national emblem; but no such flower exists within our borders. Every avenue of approach is, I think, effectually closed to the single flower.

To summarize, the single flower is an idea borrowed from the Old World. It typifies *Hate*, *Tyranny*, *Superstition*, *Slavery*, and hence should be abandoned by an American. Second, it lacks the ability to impress the observer with the primal truth of our national motto, "*E Pluribus Unum*," and on this ground should be rejected. Its advocacy will result in sectional feeling, which will be detrimental to our national interests.

The cluster (or combination in any form) not only escapes these objections, but has many qualifications that are generally realized. It symbolizes brotherly love; it will serve to break up sectionalisms. A son of the South and a boy of the North, if they saw in the floral emblem of their nation buds lying peacefully together, that represented their States bound together as a cluster, would recognize the three requirements of the floral emblem—*unity*, *strength*, *plurality*.

And, finally, it is purely American; no other nation having for its floral emblem a cluster of flowers. As we have been the pioneers in all else during the last one hundred years, let us also lead the way in this.

After reviewing the field carefully, and considering what we owe to ourselves as a nation made up of a number of individual States, each an empire in its own right, each differing from the other in customs, laws, traditions and tastes, I am impressed with the conviction that there is lack of wisdom in expecting forty-two States to unify on a single blossom as a national floral emblem; that the better way is to have a cluster; that each State may, in *purity* and *love*, offer Columbia a flower plucked from its soil, endeared to it by ties stronger than chains; she, in her appreciation, gathers them in her arms and weaves them together in garlands—spray, wreath or boquet, as pleases her fancy—and her heart goes up to God in adoration for a nation so fashioned that no petty jealousies or sectional strifes compel one single selection. But in this, as in all other things, we are truly American, and offer as a grand climax of all other emblems, the combination; each State adds her star to the constellation of brilliancy, and a flower, "God's Messenger," is sent to make up the grand galaxy of the national floral emblem.

H. D. Brown—Mr. President, the program for this evening says that the discussion of this question was to be opened by a paper by Mrs. Lamonte, and they have brought out an eloquent man to introduce the subject. But, ladies and gentlemen, I am surprised that the gentleman who introduced the subject should take the position he does, because he is a Republican, and ought to be opposed to State rights. Now, Mr. President, the position that these folks take is the rankest sort of State rights. How would Iowa look and feel if she should happen to select a Daisy as her flower, and Texas should happen to come out as a Sunflower, and cover everything, like a great big, ugly Democrat? No, gentlemen, we have turned over the last leaf in this State rights business, by burying the man who did so much in stirring up strife on State rights—Jefferson Davis—and we don't want to start the discussion of State rights again.

OUR NATIONAL FLOWER.

BY MRS. H. D. BROWN, HAMILTON.

What shall be our National Flower is a question which has been before our people for the past year or more. It is a curious fact that almost every civilized country, with the exception of the United States, has adopted a National Flower. We find, on looking into this matter more closely, that the discussion on this subject was begun in the Boston *Daily Globe*, May 13th, 1888, by a signed editorial from the pen of Jean Kencaid. Since that time the discussion has spread all over our country, crossing over the Atlantic, where the English papers have taken the matter up. But we, as Americans, feel the choice of a National Flower should be left solely to the people of the "United States of America."

All nations have their flags and many have adopted a National Flower. England has the Rose, Scotland the Thistle, Ireland the Shamrock, (which is a species of white clover), France the Fleur de Lis, Germany the Corn Flower, (which is a small blue flower, a species of pink,) Prussia the Linden, Spain the Pomegranate, Wales the Leek, Italy the Lily, Saxony the Mignonette, Egypt, Lotus, Canada the Sugar Maple, Athens the Violet. The special flower of the Hindoos has always been the Marigold, while the Chinese proudly display the gorgeous Chrysanthemum, in which there has been a great improvement the past years. There are others but we will not weary you. It is unnecessary for me to repeat that each of the foregoing has been adopted as the National Flower or emblem of the nations I have mentioned.

But as the adoption of a National Bouquet or Floral Emblem has been advocated by some *would-be-florists* in this vicinity, let us examine their suggestions carefully and without prejudice.

They claim it will be much better for each State to choose its favorite flower and to combine them in one National Bouquet, or in some other form that may suit them better, the whole to represent the National Floral Emblem of the United States. The plea made by the advocates of this is that each State will be represented by a flower, in the same manner as she is by the stars on our flag, and the Union of the stars and the combination of flowers is symbolical of our Union of States; that there will be no cause for jealousy, etc.

Now, kind friends, this looks very well on paper, and it sounds very poetical from the lips of its advocates, but it is very impracticable, as I will endeavor to show you, for in that grand old flag we all know that each star on its field of blue has an equal position with the other, and the star that is placed there for Rhode Island is as large as the one for Texas, and equal in every particular, but it could not be so in combining forty-two flowers in a "Floral Emblem." The forming or arranging of a bouquet of flowers is artistic work of which only an artist in flowers is capable of making a success, and while one person may pass through a flower garden and gather a bunch of flowers which to the eye has a ragged uncouth look, another gathering from the same garden combines grasses, leaves and flowers in such a manner that the bunch of flowers becomes a thing of beauty.

In a National Bouquet, as each State is to choose its own flower, suppose Illinois chooses the Rosin Weed flower, Kansas the Sunflower, Maryland the Marigold, New Mexico the Yellow Dahlia, California, Pyrethrum, and so on, each choosing some gorgeous yellow flower; such an event may happen, and Oh! what a great yellow block the National Floral Emblem would be.

As every artist among flowers knows how difficult it is to choose among many flowers, leaves and grasses a combination of colors to make an artistic effect, they will at once see that it would be almost impossible to take forty-two flowers selected by some one else and form a combination pleasing to the eye.

It is to be supposed that no State will choose a leaf or grass for its flower, and without these grasses and leaves the National Floral Emblem would be anything but pleasant to look upon. If a committee could be appointed to choose each State's flower, these obstacles might, in a measure, be overcome; but would any citizen of any State be satisfied to have the flower of his State chosen by a committee of citizens of other States. There are several other reasons which we will not stop to enumerate why a combination is impracticable. But, the question arises, how shall we choose a flower which shall be satisfactory to the greatest number of the people of the United States?

1st. A National Flower should be a native of the United States.

2nd. A National Flower should be one common to all the States.

3rd. It should be one that is useful in a bouquet, and one that is, also, useful as a decorative plant or flower, or one to commemorate some historical event and, also, one that the most humble citizen can procure without great trouble or expense. It should not be chosen simply from sentiment, but if we do, let us leave the choosing to love-sick John as he goes to see his best girl Mary on Sunday evening, and we may rest assured that he will choose understandingly, for he would undoubtedly choose *tulips*, or as he would pronounce it *two* lips.

The Trailing Arbutus or Mayflower has many advocates. It is, as we understand, a native of the most sterile mountain states, and we, as citizens of the Western States, are not very familiar with it.

The Golden Rod, a native of the central portion of the United States, is often voted for and seems to be quite popular. It is of graceful feathery form, and very effective for decorative purposes.

The Yucca is a native of the western plains, will grow in any part of the United States, and its large spikes of white flowers are, indeed, beautiful.

The Sunflower has also been suggested, and as a National Flower, it would have its advantages. It is a native of every State in the Union, therefore every citizen could easily procure them. There are many varieties under cultivation; "they range from the size of a small double Dahlia to fifteen inches in diameter." This plant has no historical reminiscences clinging to it, nevertheless it is held in veneration by the pioneers of the far western, treeless plains, for the amount of fuel it furnishes them during the cold winter blizzards so common there. There is also a new variety which was used very extensively as a decorative plant at fashionable entertainments in New York and Philadelphia the past season.

The Apple Blossom is, also, often mentioned, and it is well worthy of much thought; also the Corntassel or flower, for it is commemorative of the fact that the United States is able to feed the world.

The leaves and flowers of the Oak, as tree or shrub, a native of all the States, should be thought of, for who does not have a thrill of patriotism rush through them at the mention of the famous Charter Oak. We must not forget to mention that the leaves, too, are fine for decorative purposes. And, now, that we are beginning to inform ourselves on this matter of a National Flower, and think of casting our vote for any particular one, we find there is a great number which are very suitable and worthy

to take the place, and we hope the people of this country will vote intelligently, and while we have our choice we are willing to submit to the will of the majority, knowing that all will acquiesce, as in the election of our chief magistrate, and while a combination of flowers, or a National Bouquet at first glance seems very appropriate, upon closer investigation it proves a delusion and a snare; for, kind friends, let us take a glimpse of the future. Suppose each of the forty-two States has chosen its favorite flower. Some one must be commissioned to arrange them; a committee, or at least one delegate, from each State would have to be chosen. A Republican State would, undoubtedly, send a Republican delegate, and a Democratic State a Democratic delegate, that is, each State would send a man most available as a party worker without much regard to his ability or taste to arrange the flowers. It is a well known fact that the party in power would dictate the position in which these State flowers should be placed. Serious contentions would arise and the hydra-headed monster of State's rights would come to the front as in "days of yore." But in choosing *one flower* for our whole *Nation* no such contentions could arise, and we would have—Oh, glorious thought! One united country. One grand old flag, and one beautiful "National Flower."

REPORT OF COMMITTEE ON DECORATIONS.

Your Committee to inspect Floral Decorations would respectfully report that we have examined the beautiful and elegant decorations so tastefully arranged in the City Hall of Hamilton; so kindly provided for us by the citizens of this place, and arranged for our use and comfort by them and the members of the Warsaw Horticultural, and the Montebello and Warsaw Floral Societies.

Among this fine collection was some beautiful work, not showing by whom produced, consequently we may not be able to give proper credits in all cases. First we notice the words over the platform:

"WELCOME

STATE HORTICULTURAL SOCIETY,

1889."

Sheaves of grain and beautiful plumage are shown on either side of the platform, and fine collections of grains and grasses, with the bright-colored flowers, and fine evergreen background, with the national flag in the center, constitute, as a whole, a very pleasing effect.

To specify, we would name a fine design of Chrisanthemum, with center of Fucias, by Mrs. N. Lyon.

Harp of a Thousand Strings, composed of a variety of most beautiful flowers, Roses, Verbenas, Geraniums, Smilax, &c., placed upon an easel of cane, produced a fine display, being the work of the Montebello Floral Society.

The Warsaw Floral Society furnish a *Floral Scythe*, reminding us of Father Time, the great destroyer; the entire scythe and snath was gilded, and the blade covered with white flowers, and the snath with a fine bouquet of flowers; altogether a thing of beauty.

Mrs. Umshler furnished a fine design, composed of fruit, flowers and vegetables, very artistic, from fresh specimens.

A most beautiful wreath of flowers, composed of forty-two varieties, to represent the national emblem, the elegant work of Mrs. Lamonte, was presented to the Society in a happy and most eloquent address by Mr. C. N. Dennis.

All of which is most respectfully submitted by your committee,

A. L. Hay,
W. H. Greene,
Henry Speer.

Mr. Hay—Ladies and gentlemen, standing on this platform in the presence of these assembled fair ones, and looking at these flowers and flags, and all the beautiful things gathered here it seems to me that the most beautiful of all is that grand old flag. I wish now as I stand here before it to speak a word of praise for the thousands of fallen heroes who gave themselves that that flag might be preserved to us. I will say that there is not a person here whose heart is not wrapped in that flag, and we believe that the stars in its bright blue sky shall continue to come forth until there are one hundred of them, and one hundred and fifty millions of happy people shall live under it. As to those decorations of flowers, it is not possible to do them all justice. The names of many of those who brought them are not attached and your committee has no means of knowing to whom our thanks are due. This magnificent harp is the work of the M. F. S., and if the ladies of that Society have as many strings to their bows as has this harp, they are in good luck. Here are various collections of flowers, fruits and vegetables,

many of them overflowing with beauty and grace, but that which rejoices us most is the kindly treatment we have all met at the hands of the people of Hamilton and vicinity. We thank you.

Prof. W. H. Ragan, of Indiana, being called upon for his promised paper, spoke as follows: "It does not seem appropriate for me to say a word. You have certainly reached a climax in your exercises, and the only really proper thing would be to adjourn, but since I have come several hundred miles to attend your meeting I will have to beg your attention for a few minutes. I do not call your attention to the subject announced for me in the program, for I had not time to prepare it. It was my privilege recently to attend a large pomological meeting where was exhibited many fruits that are too tender in our latitude, although they are grown several hundred miles north of us. I think I can explain that to you and also what a good thing you missed in not adopting a resolution introduced into one of your Society Meetings to have Lake Michigan removed to your western border. I will say now that the fruit exhibited I referred to was the Michigan exhibit at Detroit last fall, and it consisted largely of the fruits grown in the extreme northwestern portion of Michigan."

The Professor now presented a paper of great interest, showing the origin and movement of a "cold wave" across the country, which he illustrated with numerous charts. The manuscript has not been furnished for publication.

Mr. Sparks—Last September, at a meeting held at the home of Mrs. Lamonte, a paper was read, which was about to draw out discussion, and a motion was made to postpone discussion to some future day and to discuss it in other horticultural societies.

The Secretary of the State Society was present and it was agreed that the question of a National Emblem should be discussed at this meeting, but no fair opportunity has yet been afforded.

President Dunlap—I think there will be an opportunity afforded to-morrow for any discussion that may be desired.

Mr. Green—I move that the subject brought before us by Prof. Ragan be referred to the Experimental Stations.

Carried. Adjourned.

THURSDAY MORNING.

Called to order by the President. Opening prayer by the Rev. Mr. McArthur. Report of Committee on Experiment Stations:

REPORT OF COMMITTEE ON EXPERIMENT STATIONS—WHAT IS BEING DONE.

BY JAMES T. JOHNSON, WARSAW.

The very important character of the subject assigned, and the single feature of it, to which I am expected to address myself, is in a measure embarrassing, for the reason that I shall find it exceedingly difficult to confine my remarks to a part of a subject, i. e., "What is being done."

Possibly, you will expect me to speak only of what is known as "The Hatch Experiment Stations," now conducted by the several States, under the law of Congress known as "The Hatch Bill." And yet it is probable that others will expect some notice taken of the *earnest, practical and intelligent experimenters* who are working independently (and successfully, too).

The experiment stations of the States are, of necessity, general in their character, and can give but a limited portion of their time to horticulture, or to any one subject.

Thus far, the most important part played by these stations in horticulture, has been in the study of plant diseases and parasites, and in the examination and test of proposed remedies. And in all matters that require scientific investigations, or thorough chemical tests, their work has been eminently successful, and will so continue to be, as this is a work that the organized station only is prepared to do.

The experiments with the varieties of grains, of grasses, of garden vegetables, and of very many plants, are being carried forward by these stations with evident advantage to the *agricultural* interests of the whole country.

But in horticulture, more and better results *need to be secured*, to meet the wants and the expectations of our people.

It is hoped—we are told—that such will yet be the result, and claimed that our stations are yet in their infancy, and hardly in condition for their most effective work. This is correct reasoning only in part, and while we are ready to admit that they are doing a work that the average unscientific farmer is not prepared to do, yet to us it is plain that in the matter of the production of new varieties of fruits, and in settling the question of their adaptation to our soil and location, we need the work of the

specialist, the *expert specialist*, "The specialist, *both born and educated.*"

When Prussia found a "Krupp," she took possession of him and gave him to the life work, for which, by both nature and training, he proved to be so eminently fitted, and left the venture of finding another Krupp to some one with less foresight than Von Bismark, and in this matter we should wisely profit by their experience.

We recognize the importance which attaches to a knowledge of the fact that we have *many* varieties of soil, and that a better knowledge of this is possible, *and advisable*, and we admit that *but few* of our people are prepared to enter into chemical tests of the composition of these soils, and that this our stations can, and *ought to do*, and *are doing*, and by which knowledge the enterprising and industrious farmer will be enabled to maintain, or to renew the fertility of his soil.

We know also that in the study of rusts, smuts, blights, rots, mildews, etc., etc., and in the control of these, and of injurious insects our stations are making great progress, and further that the most careful tests are now in progress, which are destined to show the difference in the value of the different breeds of our domestic animals of the same species, for the different uses of man. Also to show the effect of the use of *different kinds* of food, and of the *same kinds* of food in different conditions, as to its results in the production of meat, of milk, of wool, etc., as well as its digestibility.

But of all the many experiments that come in the line of work for our general experiment stations, none is so difficult for them, or yet so tedious or slow of results as those that pertain to fruit growing, to the originating or producing of new varieties by cross fertilization, (or otherwise, as it is indeed already claimed to be possible to improve old varieties by selection, culture, etc.,) and the testing of new varieties after being produced. In the whole study and practice of horticulture, difficulties and problems, (old and new), continue to present themselves, such as our *general* experiment stations can hardly *ever* hope to solve; problems that can better and more surely be *worked out* by our *born* and *educated specialists*—possibly I should say fruit—cranks.

The peculiarities of the results of location, and that without any evident effect of the character of either the soil or formation, does *and will* continue to confront us, and to thwart in a a great measure our efforts in the future as it has done in the past. And yet, (without being able to tell the reason why), we are compelled to admit that this peculiarity does exist, and that we have no right to ignore the fact, and could not if we would.

Some have learned—and it is somewhat strange that thousands have not learned ere this—that it is of no practical value, (and practical values should be our aim), for us to know that Bald-

win and Greening apples do well "away down east," so long as we continue to grow apples in Illinois; and *some of us* have learned full well that what is most certainly true as to the local character of the varieties herein named, is equally true of hundreds of other tested fruits, including everything from the apple down to the end of our whole list of fruits. And we hope that the *practical men* who have planned our *local* experiment stations—nine in number for a single State—had this all important idea in view, and the more closely they follow its teachings the shorter and the more sure will be their road to ultimate *success*.

REPORT OF COMMITTEE ON EXPERIMENT STATIONS—WHAT CAN BE DONE.

BY ARTHUR BRYANT, PRINCETON.

With the increased appropriation to our Society by the Legislature have come new responsibilities and duties to be performed.

One of the conditions when the increase was granted, was, that at least $1,000 should be annually expended in experimental work. It has been made my duty to tell: "What can be done at these experimental stations that have been formed by the Executive Board."

It will not be a difficult matter to tell what can or may be accomplished in this line, but I think it will take much more thought and study to say what is best to do, or rather to undertake to do, at the present time, and with the present means at command.

At the outset the Board saw that the limited amount of money would not admit of any very elaborate, extended or costly work being undertaken.

Three experimental stations were established in each district of the State (nine in all), and it was decided to confine the experiments mainly to the testing of new varieties of fruits, the spraying of fruit trees for the destruction of insects, and such other work as could be carried on at the different points without any great expense; the main idea being to keep the work within the means provided, and still show the greatest and most practical results. With some it may seem that the experimental work has been spread over too much territory, and it would have been better to have confined it to fewer points.

The fact that our State extending through so many degrees of latitude, and having so varied a soil and climate, could not depend on a single experimental station, and secure results that would be satisfactory to other portions of its territory, induced the committee having the matter in charge, to accept the present

plan of conducting the business. At present I see no occasion for changing this feature materially.

The experiments which have been begun should, as far as possible, be carried through to definite results.

The committee in charge should insist on a careful record being kept of all work done at the stations, and have it reported as frequently as necessary or desirable.

These reports will be a most essential part of the work, and should be full and explicit, giving in detail the methods and results obtained.

I will give a few suggestions as to what may be done in this experimental work, with this qualification, that I am not sure that this is *all* which should be undertaken now.

More thorough tests in the spraying of fruit trees with arsenical and other poisons.

There seems to be no doubt of the value of this method of treating our trees, for the destruction of many of their insect enemies, both of leaf and fruit. However, there seems to be a great difference of opinion among those who have used these poisons, as to how strong they should be applied, and their effects on the foliage; claims being made that the injury to foliage is much greater when they are applied late in the season. These are all proper subjects of farther investigation.

In the Central and Southern districts the spraying and other applications for the grape rot should be continued. Climatic conditions not being so favorable for this disease in the northern portion of the State, its effects there are not so serious.

The effect of various methods of cultivation on our different kinds of fruits, also the application of commercial and home-made fertilizers, showing results as to their increased growth, fruitfulness and maturing of wood growth, often called hardiness. The testing of summer and winter mulching on our orchards and plantations of small fruits, hoping thereby to enable them to withstand summer heat and winter cold, and thus increase their fruitfulness, are all subjects worthy of consideration.

At some future time should the affairs of the Society be in a condition to justify, it would be eminently proper for it to institute a more extended and scientific line of experiments. This work would imply the employment of persons with scientific knowledge and a sufficient amount of funds, and should not be undertaken until there is a good prospect of carrying it through successfully. But I will not consume more of your time, feeling that whatever disposition is made of this matter by the Executive Board will be for the best interests of the Society, and also an honor and credit to the State.

DISCUSSION.

Mr. Gaston—I think these experiment stations will be of value if rightly conducted. Every fruit seems to have a special place, and it certainly will be profitable to have experiments intelligently conducted to tell us what fruits are adapted to the different localities. I have been running a small experiment station for the last ten years, and I find I have gained a premium on one of my seedlings. Mr. McKinney is an experimenter in strawberries and has shown that we can do well out our way. You fellows will have to look out or you will get beat in your nine experiment stations. You have got the Marshall County Society to buck against.

Mr. Thomas—Has any one had experience in spraying small fruits, especially for the midgets in the strawberries?

President Dunlap—I think spraying them would be very objectionable, from the fact that it is so short a time from the setting of the fruit until it is ripened that you could not depend on the rains washing it off. I would say this, that those experiment stations are not for the purpose of stopping individual investigation, but to encourage it, and we hope that those outside will do all they can. The object of the stations is that the Society can have places to make experiments and call on these men for reports, and get the reports whether the experiments are a success or not; individual experimenters do not report if they do not succeed.

Mr. Webster—I think private experiments are very well as far as they go. While they may not reach the results of the experiment stations, yet they will be of great benefit. I have done much experimenting and others in my vicinity have, also. I was the first person who made extended experiments in seedling strawberries in Southern Illinois, and now they are grown by the thousands of acres. Though many claim that it has hurt the trade, I do not think so.

Mr. Williams, of St. Louis—These experiments are well in many ways. Statistics as to temperature, rain and sunshine, may be much more thoroughly gathered at these State stations than by individuals.

Mr. Thomas—Have the experiment stations tried the fertilizers on small fruits? We know that a few years ago the Jessie was

lauded as the coming berry, and I investigated it and found that at Janesville where the Jessie originated, there is a large chemical fertilizing establishment, and I thought that might have something to do with the success of the berry.

President Dunlap—These stations have been in existence only about six months, and have not had time to experiment much.

Mr. H. D. Brown—I know it is a fact that a nurseryman will have a stock on hand and he has not time to experiment. He has got to get rid of it. As a friend of mine once said, if you have a lot of stuff on hand, you want to run it off before you know much about it. For instance, I have a lot of Walbridge apples up here and I wish I had pushed them off faster. I think the experiment stations are the places to try new varieties.

Mr. McKinney—I think the nurserymen should know just what they are doing and what they are selling; and I think the experiment stations should test everything.

Mr. Cotta—One thing has been overlooked, and that is the introduction of new varieties. If a man does not wish to have his product get on the market, he can say so to the experiment stations and not a plant need go on the market without his consent.

Mr. Webster—The public should be protected from sharpers. I have been imposed upon, perhaps to the extent of $1,000 in the last ten years—perhaps not intentionally—but fruits are largely local in character, and what might be good for one part of the country, might be of little value in another part of the State.

President Dunlap—I think it would be well to have the reports of the stations sent out and published frequently and generally circulated, as we want to get the people to depending on them.

REPORT OF COMMITTEE ON NEW APPLES—CLASS IV.

In the absence of all description of tree as to hardiness, bearing, &c., your Committee on New Apples was obliged to be governed wholly by the appearance, size and quality of the specimens on exhibition, in making the awards.

We found Moore's Sweet, a well known old variety, entered as a seedling. We also found the old familiar variety, McLellan, among those entered as new varieties.

For the best plate of new apples, we gave the first premium to "Nero, a seedling of the Gilpin," exhibited by Mr. E. A. Riehl, of Alton. This apple is of good size, fine appearance, dark red, regular form, and in flavor resembles very much the Gilpin. Said to be a good keeper.

We awarded the second premium to Mr. A. C. Hammond, of Warsaw, for the Shackleford, a seedling of the Ben Davis, recently introduced in Missouri.

Mr. Hammond exhibits a fine, large apple, said to be a seedling of the Yellow Belleflower; but, in the absence of all knowledge of the tree, we could not recommend it for cultivation, and neither do we feel justified in recommending any of the seedlings which were on exhibition without further knowledge of the tree, as to hardiness, &c.

Best Collection of New Apples not to Exceed Five Varieties (three entries)—First premium to A. C. Hammond, of Warsaw. Second premium, J. Christian, Mt. Carrol.

Best Plate Seedlings (four varieties)—First premium, J. V. Cotta, Nursery. Second premium, A. H. Gaston, Lacon.

G. B. Brackett, *Committee.*

Col. Brackett—Your committee has found it difficult to make a report on new fruits, because of a lack of history of the fruit. We would suggest that in presenting new varieties of apples, it would be well to have a report made of the characteristics of the tree. It is impossible to have an intelligent opinion of an apple without also knowing the habits and make-up generally of the tree. And we would not recommend that the apples placed in your exhibit as new varieties be put before the public in your list without further knowledge of the trees from which they come.

President Dunlap—I think the suggestions of the committee are all right, and I recommend them to the Society.

Mr. Bryant—I move that the report be accepted, and that those who can bring a proper statement be allowed to do so. Carried.

TOP-GRAFTING FRUIT TREES.

BY J. V. COTTA, NURSERY.

No well informed horticulturist will question the fact that the well-being and consequent longevity and profitableness of a fruit tree depends very materially upon the manner of its propagation, especially in the North; and it is likewise a well known fact that no amount of care and cultivation given a tree after being

placed in its orchard home, can ever atone for a mistake made on the point under consideration in this paper.

I need not point out the premature decline or the altogether too frequent destruction of fruit trees throughout the vast region of country north of the fortieth parallel and west of Lake Michigan —a region otherwise unequaled on the face of the globe for the universal fertility of its soil, and the almost limitless productions of its farm crops, and its domestic animals, for that is an old, old story. But that in such a wonderful country like this our fruit trees should be the only products of the soil which do not attain a normal length of life, and which, in fact, may die during any season and at any size, is certainly a question worthy our most serious consideration. The test winters of 1855-'6, '56-'7, '72-'3, '77-'8, '82-'3 and '84-'5, and several others almost as severe, should be ample proof of the fact that the great majority of our trees, as commonly propagated, are lacking in that constitutional hardness so necessary to resist the extremes of our peculiar climate; and unless we can produce trees that will pass such test winters unharmed, we have no good reason to expect any better success in the future than we have had in years past.

In considering the practicability of improvement in hardiness of the pear, plum and cherry by top-working, I can only say that there are no pear stocks available as yet, by the use of which the hardiness of the varieties in cultivation could be improved. The same may be said of the cherry. Nor is there any improvement in the hardiness of the European plum, in its numerous varieties, to be looked for, since all of these have shown a want of affinity for our hardiest American plums, and in all attempts made in top-working the former upon stocks of the latter, the scion has invariably outgrown the stock. We have quite a number of native varieties which are worthy of propagation by the common methods, and therefore we shall have to dismiss the consideration of these fruits in connection with the problem at hand, and confine ourselves exclusively to the king of fruits, the apple.

Half a century of apple culture in the West and North presents to the investigator a veritable "checkerboard" of successes and failures, of hopes and disappointments, and why? Is the climate at fault? I say verily, nay! For He who created this magnificent country, knew full well what sort of a climate to furnish for it. Has it not been entirely our own fault that we have suffered so many disappointments, and will it not be our own fault again, if we suffer any more such disastrous results as the winters mentioned have brought upon us?

Is it not a fact, that attempts of growing varieties not adapted to the localities where planted, inadequate methods of propagation, neglect of proper care and cultivation and fertilizing of the soil, and more or less neglect and abuse of the trees, have charac-

terized the general management of orchards throughout the western country? Experience is a pretty correct teacher, if an expensive one, and her mandates may not be set aside with impunity. Some twenty-eight years ago, we flattered ourselves with having a goodly number of "iron-clads," but later winters have reduced that number to the Duchess and a very few other Russians, and the crabs. One entire splendid assortment of American varieties have come to grief more or less.

When I arrived in Northern Illinois, thirty-five years ago, low-headed trees were claimed to be "just the thing." Those that "knew" anything about apple culture were fully satisfied that trees must be headed near the ground. Well, the winters of 1855-'56-'57 "wiped out" any amount of them. Those low-headed "pets" were killed fully as dead as their taller-stemmed brethren. But history will repeat itself, and we find that two "leading horticulturists," in recent communications in a leading western agricultural journal, advocate the planting of "maiden trees;" that is, yearlings to be headed back so as to branch close to the ground. I would like to have these gentlemen explain, if they can, how such trees are expected to resist the effects of such test winters as those mentioned, which destroyed nursery trees throughout the northwest by millions; or, if they should escape long enough to bear fruit, what is to hinder them from splitting and breaking down, the same way their "illustrious" predecessors did years and years ago? Another "leading" fruit grower has of late years advocated the setting out of the root graft in the orchard at once, so as to prevent injury from transplanting. Well, a sweet time he and his followers will have, to keep their bearings when cultivating their trees. I fear they will have to bring their compasses, quadrants and lanterns into requisition.

Various other theories have been advanced as "specifics" for successful apple cultivation; such as grafting on short root sections and long scions, so as to compel the scion to strike roots of its own; whole roots are advocated in order to retain the whole vitality of the stock, which is "fallaciously" claimed to be destroyed by the use of sectional cuts. It seems these men do not realize the fact that a piece of root is just as capable of reproducing a properly constituted root-head to the tree, as a piece of top-shoot or scion is of reproducing a complete top. Budding has been claimed by some to produce hardier and better trees than root grafting; but where is their proof? The use of French crab stock is another hobby; when it should be known that that term is a misnomer, and those are simply seedling stocks from seedling parent trees and no crabs at all; moreover these imported stocks are far less hardy than our own. Others again appear to stake their entire hope on the Russians, but even on this point we find but small encouragement. The Northern Iowa Horticultural Society, two years ago, after extensive trials for seventeen years,

adopted a small list for general cultivation in their district, but at their last meeting they rescinded that action as premature. Whereupon they appointed a committee, with Prof. Budd as chairman, to make a selection for trial only. This committee selected eighteen varieties, nearly all of which are summer and fall apples, and this out of some 400 varieties. The Wisconsin State Horticultural Society, at their last meeting, described nine Russian varieties, with no other recommendation than such description would carry; one of these nine is described as being "tender North, unless top-worked on some hardy stock."

Now while there are a limited number of these Russians that really possess valuable traits, such as superior hardiness, productiveness, fine size and handsome appearance of fruit, of fair and even good quality, the great majority of them, however, possess serious faults, among which unproductiveness, tenderness, inferior quality and predisposition to blight may be mentioned, while nearly all of them mature their fruit in summer and fall; no satisfactory late keepers having as yet been found among them that could compare favorably with our own native winter sorts.

The growing of seedlings is looked upon by some as our only hope; well, while commendable progress has been made in this direction, the final result is yet too remote to be of immediate practical use. It should not be overlooked that nearly all of our approved native sorts were unnamed seedlings once, and that we shall be obliged, for many years to come, to place our main dependency for winter and spring apples entirely upon our native assortment of keepers; and as these have all proven more or less defective in endurance of the vicissitudes of our climatic conditions when grown by root-grafting or budding, the only feasible way left us, if we would grow such trees possessing a hardy constitution, is to grow these by top-working upon congenial "iron-clad" stocks.

Of Siberians that have given the best results as stocks, I would name Whitney, Milton, Virginia, Shields and Orion; and among Russians the Duchess, Charlamoff, Hibernal, Enormous and Green Streaked will be amply sufficient and entirely satisfactory for all practical purposes. There is not a variety—no matter how vigorous a grower,—but what will produce a perfect union with some of these "iron-clads," and I am fully convinced that if our northern nurserymen would take hold of this matter in good earnest the result would, in a very few years, be a most gratifying one. By this process of double working—if proper attention be paid to the affinity of the different varieties for one another—we can have good, healthy, hardy and profitable trees of nearly all of our old favorites—trees, that will endure our severest test winters, remaining vigorous and productive for a much longer period than if propagated by any other known

method. With such trees to start with if the orchardist will, afterward, take reasonable care of them by proper cultivation and fertilizing of his orchard—if he will give attention to the shaping of his trees (the umbrella form being decidedly the best)—if he will protect the trunks against rabbits, mice and borers as advised in Mr. Minkler's paper—if he will not butcher his trees by barbarous or untimely pruning—if he will wage a determined warfare against insect pests and, finally, handle and market his fiuit in a careful and judicious manner, the results will be most gratifying, No money in apple culture, do you say? If so, what do you call the returns of one old tree near Polo, which in '86 yielded forty-five bushels of marketable apples, which sold for $1.25 per bushel; making $56.25 as the gross receipts for one year's crop of one tree. Mr. Whitney, of Franklin Grove, has repeatedly realized from top worked Red Astrachan trees $30 per tree from one year's crop, when root grafted trees of the same ages, and with the same treatment, have not paid for the use of the ground occupied. In my own experience I have suffered as serious losses from winter-killing of root grafted trees in the nursery as, perhaps, any one of our northern growers. During the winters of '82-'83, '84-85 alone, over 40,000 of them were ruined, while my top-worked trees of the same varieties, of the same ages from the root-graft standing in the same blocks, and under the same cultivation, escaped without the loss of a twig or even a bud. I might go on, citing numerous other instances of the same sort, but having already intruded too much upon your valuable time, I must leave this matter in your hands and only say: if these statements shall be instrumental in leading others to give this matter fair and impartial trials, I shall feel amply repaid for writing this paper.

DISCUSSION.

After reading his paper, Mr. Cotta exhibited several top-worked trees, with one, two and three-year old heads, to illustrate this mode of propagation. He also called attention to the necessity of forming the heads of these trees as near to the point of union as possible, in order to prevent their growing disproportionately tall, and stated that all forks of the one year headed trees should be cut away and the central or leading shoot cut back to about a foot from its base. With this properly attended to, the second year's growth will form a fine, symmetrical head. If the removal of forks and the heading back of tall-growing leaders be once or twice repeated afterward, the tree will easily acquire the required umbrella shape, with the lower branches spreading out nearly horizontally at a height of five to six feet

above the ground and will easily bend under a heavy weight of fruit, without breaking.

Question—Why do you top-work your trees at such a height as four feet? Why would not two or three feet high answer every purpose as well?

Mr. Cotta—The "dead line," if I may use that term, extends from one to two and even three feet above the ground, at which point the greatest injuries are always noticeable, and I want to get the heads of my trees as high above this danger line as possible consistent with a good proportion to my trees. Besides this, I want as much of the iron-clad timber in the trunk as I can get. And I am satisfied that a height of four feet answers the purpose in view better than any other.

Question—How do you prevent sun-scalding with such tall stems?

Answer—The varieties I use for stocks are not subject to this difficulty like half-hardy varieties, but it is a wise plan to protect the stems of these trees against rabbits, mice and borers, as suggested by Mr. Minkler in his valuable paper, and in so doing you will guard against all danger of sun-scald.

Question—How can we know what varieties will, and will not produce a good union with one another?

Answer—That is a pertinent question. I have been testing a good many varieties since 1882 and don't know it all yet, and am still testing. I have quite a number of kinds that produce as even a growth as the trees I have shown you. But I have also some kinds that I have not yet learned to mate properly. This question should be taken hold of by our experiment stations and nurserymen generally, and I am confident that we shall succeed.

FRUIT GROWING COMBINED WITH FARMING.

BY WM. JACKSON, GODFREY.

Mr. President and Members of this Society:

It has been a general opinion frequently expressed that "Fruit Growing combined with Farming" is not usually successful. I am free to admit that so far as my observations have extended that such has been the rule. But at the same time I am satisfied

that "Farming combined with Fruit Growing" may, with proper management, be made very successful.

There are many advantages to be derived from "Farming combined with Fruit Growing," and probably they appear more prominently to the grower of small fruits than to the orchardist. One great advantage, and probably the greatest one, is that the small fruit grower is able to concentrate all his force at a given point when necessary. I think there is no difficulty in managing a small fruit farm of thirty or forty acres in connection with the same amount, or possibly a little more devoted to farm products, with very little, if any, more hired help than would be necessary to successfully run the thirty or forty acres of small fruits alone. I, however, wish it understood that my allusions in this matter are confined to the growing of small fruits, plums, cherries and pears particularly. With apples I have had but little experience, as I have always thought that a fruit so universally grown as the apple was not of much use to the professional fruit grower, and I must say from what I have seen of apples in general, I have been led to think that a curse has been left upon them by our first parents that all the efforts of their offspring have been unable to remove, and I know that at the present day the apple is a frequent source of discord and profanity.

Another benefit to be derived from farming combined with fruit growing is that the person so engaged has a greater diversity of crops to depend upon; crops that will find employment for himself and help, and be a source of income during the winter months, at a time when otherwise he would be living on the profits, (if any), of the past season; or, as is frequently the case, anticipating the crops of the following year. He can also, at the same time, retain such help as he may desire to assist him in harvesting and disposing of his farm crops during the winter months, thereby avoiding the disadvantage of having to take such help in the spring as may be available, whether suitable to his purpose or not. On the amount of land specified he would be able to grow enough wheat to produce a sufficient quantity of straw to use for mulching, bedding for his stock, and for many other purposes for which straw is needed. He could also raise enough corn, oats and hay to feed all the stock that it would be necessary to keep for his calling. That there are not many fruit growers who have this amount of land of their own necessary for the purposes mentioned, I admit, but I have had no difficulty so far, in being able to lease land at a fairly reasonable rate to produce the crops named to meet all my demands. And though it may not at first sight appear to be a strictly Christian principle to take crops from my neighbor's land to enrich and improve my own, I do not think that public opinion has anything to do with a matter of this kind so long as the parties interested are satisfied.

But, Mr. President, there are a great many other things necessary to success in "Farming combined with Fruit Growing." Good tools are essential; also a proper place to keep them, (the latter I am sorry to say I have not got); more than an average amount of good temper, (I am doubtful about that, also); and, above all, a large amount of faith in that Providence who I think does just about what is right. If the individual man would do the same, success would be certain. Added to all this, I think that it is necessary for a person engaged in fruit growing to have a fair amount of brains, and at the same time know how to use them.

Though it is my impression, that under ordinary circumstances "Farming combined with Fruit Growing" may be made both successful and profitable, I do not expect it to be understood that I have been uniformly successful. If I had the necessary qualifications to write an amusing article on this subject, I know nothing that would be more suitable for the purpose than my own mistakes. In fact I know that I have obtained more sound information from noticing the mistakes and short-comings of myself and others, than from any other source.

In order, Mr. President, to partially explain and bear out the foregoing statements, I will, at the risk of being accused of egotism, again state that what I have said before as well as the following, has been proven by practice. I have at present under cultivation fully one hundred and five acres of land in crops about as follows: Thirty-five acres in fruit and vegetables, twenty-nine acres in wheat, five acres in timothy, three acres in rye, to plow under in spring for corn, and ten acres in clover. I had this year upwards of forty acres in corn that I think will average over forty-five bushels to the acre. I had the corn removed from a portion of the land and have seeded it to wheat. A part has also been fall plowed preparatory to seeding to oats in the spring. While I do not believe in oats as a paying crop, I think that it is necessary at the present time to proceed in this manner to get a part of the land in proper shape for future crops. The above figures, however, are by no means arbitrary, especially in regard to farm crops, but may be changed as prudence or necessity may require. For instance, I do not expect to have at any future time forty acres of corn; as a crop it takes too much labor to attend to it properly, and it is too bulky for the money there is in it. In regard to the amount of hired help that I have found it necessary to employ to take care of this amount of land, I will state that I had three men during the busy season, and I employ one man at present. Two of those men were with me from the 1st of May till the last of September. With this help I have been able to keep everything in good order and make some improvements. I do think, however, that I have been so far very fortunate in getting suitable

men for my purpose; men who were fully competent for the work that I had for them to do. I was perfectly satisfied with their work. I paid them good wages; paid them every week and only required of them a fair day's work.

I offered them inducements to take an interest in the work on the place and had no difficulty whatever, when in consequence of a storm or for any other cause, in getting them to work a little harder, or stay a little longer, as the case might require. I do not remember an emergency of this kind occurring except once during the time we were cutting wheat on the 29th of June, and then I had to turn in and bind a station in very heavy wheat. This fact is still very firmly fixed upon my mind, but I changed the order of things next day by hiring an extra man till we got done harvesting.

While it may be possible that Madison County is especially favorable for raising farm crops suitable for the purpose stated in this paper, I do not claim that it is so. It may, also, be possible that climatic condition or quality of soil in different parts of the State might make it necessary to raise different crops. But in my opinion with ordinary care the result would, practically, be the same. I think success, as I have before stated, is largely due to the taste and inclination of the individual, with possibly a certain amount of determination. As an illustration I will state that I started fruit-growing with no experience whatever, having been for forty years engaged in a calling that was foreign to husbandry altogether, and I remember that at the beginning I hustled things considerably, but I held on, till now I can say that my success has almost exceeded my expectations.

This article may not be altogether shipshape, but the ideas embodied have been obtained by hard work and personal observation. I have always considered that one fact was worth a dozen theories. A great deal more I know might have been said on this most important subject, but if what I have said shall, at this or some future time, induce an abler mind to finish what I have begun, I shall feel amply repaid for the time and trouble it has cost me to write this.

REPORT OF COMMITTEE ON SPRAYING FRUIT TREES.

BY L. R. BRYANT, PRINCETON.

When the Spraying of Fruit Trees with solutions of arsenical poisons was first advocated for the purpose of destroying the canker-worm and other pests that work on the foliage of the trees, its beneficial effects were apparent very soon after the applications were made. The dead worms could be found in numbers within a day or two, on the ground or on the leaves of

the trees. The efficacy of spraying to destroy the canker-worm is unquestioned.

With the more extended use of poisons to prevent the ravages of the codling-moth, we find more uncertainty as to their effect. And this is necessarily so from the nature of the enemy we are fighting; its work is done before we know, for a certainty, that it is on hand, ready for business, although it must be confessed that the "exceptions" are only numerous enough to "prove the rule" and it generally *is*, with us, on time.

My own experience in fighting the apple-worm has been confined to the past two seasons, and from this short experience, I could keep very close to the facts, and still land myself on either side of the fence I wished.

To illustrate: in 1888 I sprayed the trees in three orchards, all of them three and some four times at intervals of about a week. Not a very long time elapsed, after we had finished, until I heard that my men were saying that I had sprayed my trees so much as to injure them, and as a consequence the apples were all dropping off.

This was true to the extent that in places the leaves were somewhat scorched, and in one orchard of Willow Twigs the apples did nearly all drop off. Now, if this one orchard had been the extent of my operations, I could hardly have escaped ascribing the spraying as the cause of the mischief, but when I looked around and found the same variety in an adjoining orchard, that had the same treatment, or a little more of it, loaded with the fairest fruit they had produced in years, I concluded I must look elsewhere for the causes and could not land on the *non-spraying* side of the fence just yet, and denounce spraying as only an injury to trees.

As the season advanced, I found my apples generally fair, smooth and with scarcely any wormy ones among them. This, certainly, looked encouraging, and spraying seemed to be a success. But one thing rather bothered me; an orchard which we did not spray at all, seemed to be almost *as* free from worms as the others, and as apples came into market and to the cider-mill, the general remark was "no wormy apples this year," and these apples came from persons who did not spray—many of them had, probably, never heard of such a thing—and if they saw the work in operation would inquire if we were sprinkling the trees because it was so dry and the trees needed watering! Clearly I was still astride the fence, and not ready to drop on the other side and call spraying a perfect success, without further investigation.

In 1889, owing to rainy weather, we were late in commencing operations and sprayed our orchards only twice, and portions but once. The results seemed as diverse as the previous season. In common with many other sections of the State a large propor-

tion of our apples—especially late varieties—were small, scabby and cracked, but as this was so universal, spraying, probably, did not affect it one way or the other. In one orchard a number of Duchess and Fourth of July trees bore a full crop of fair, sound apples, with scarcely a wormy one in the lot. The few Transcendant Crabs and Maiden's Blush were comparatively free, while of later kinds in the same orchard, quite a proportion were wormy. One orchard, mainly of winter apples, which is entirely isolated from other bearing trees, seemed to be very free from wormy apples. This was sprinkled twice, and at the same time as the other orchards.

These are the facts as I observed them; now what caused the difference in results? Did it "just happen so," or can we find a cause for it? Perhaps you will be interested in the deductions which I made.

The isolated orchard was free from worms last year, (1888) which we can credit to the spraying that season, or the light crop of '87, or both, and consequently there was little to breed a crop this season, and what few eggs were deposited were kept in subjection by the spraying.

The early apples in the other orchard were near trees which were not sprayed either season, but the fruit was matured before the second crop, which entomologists tell us is the most numerous and destructive, had got in their work, but the later kinds in the same orchard *did* afford the moths the opportunity to deposit their eggs, and consequently the wormy apples.

My conclusions, therefore, are that spraying apple trees with arsenical poisons is beneficial, and not at all injurious, if properly and intelligently done. I would spray two or three times in the course of the season, at intervals of about a week, commencing just about the time the blossoms fall, and ending before the apple gets heavy enough to hang downward. This I am convinced will keep the canker-worm in subjection, and materially lessen the ravages of the codling-moth, and I believe if it could be universally done, would well nigh exterminate it.

A word of caution here. Do not go on the principle that the more of a good thing the better, or you may burn the foliage of your trees severely. One pound of London Purple to 160 gallons of water is strong enough for the first application, and unless the weather is damp or rainy, I would advise weakening succeeding applications to one pound to 180 or 200 gallons of water.

At some future time I intend to try the experiment of a mixture of a solution of London Purple with an emulsion of kerosene.

My apparatus for spraying is simple. Two wagons are fitted, each with a 160 gallon cask mounted on its side, and a Field's Force Pump, which can be changed from one cask to the other. In operation, the poison is put in the casks before filling with water, and by the time the wagon gets to the orchard, the con-

tents are well mixed, and the "swash" of the water caused by the motion of the wagon and the shape of the cask, keeps the poison from settling. One rig is at work in the orchard while the other is filling. In this way a large number of trees can be gone over in a day. I use the same rig for spraying potatoes, using a broad spray, keeping the hose as close to the ground as possible, and giving it a quick side motion, covering four or five rows at a time.

The orchardist who can produce fair fruit free from worms is reasonably sure of a good price, and, as matters look now, spraying is the only way to secure such fruit.

ON SPRAYING FRUIT TREES.

BY J. G. VAUGHAN, ODIN.

While I am not an expert on this subject, my own experience and my own observation of others is offered, in the hope of adding something to the common fund, where, I apprehend, some exact knowledge is now needed.

That the use of insecticides has become an absolute necessity, few intelligent fruit growers will now deny; but many of the earlier attempts were so unsatisfactory, that many refrained from any effort for fear the injury to the tree would outweigh the benefit to the present crop of fruit.

My experience is confined to the use of arsenic: the first experiment being on twenty large apple trees, in 1886, in the proportion of one pound to one hundred gallons of water. This was very effectual in destroying the canker-worm and codling-moth, but was equally fatal to the trees. After a lingering illness, they all died.

In 1887, one pound was used to two hundred gallons. This destroyed the insects, but scorched the leaves badly, and some of the most exposed branches died the following season.

In 1888, one pound to four hundred gallons destroyed the insects, and damaged the foliage slightly. Whether a weaker solution would not have been equally efficient, I am unable to say; but, "as a burnt child dreads the fire," we this year did not spray at all, but had an injurious number of the codling-moth.

My experience with arsenic in my own orchard, and observation of others who used Paris Green or London Purple, leads me to believe that the use of either of these of the strength commonly recommended, is very injurious to our fruit *trees*. Even where the trees are not killed outright, the injurious effects are plainly visible in the shortened and stunted growth of the current season, particularly on those branches most exposed in spraying, probably because they received more than their share of the poison. It was also plainly noticeable the following

season in the unfruitfulness, and in many cases in the death, of many of these branches, while the remainder of the tree appeared perfectly healthy, and was loaded with fruit.

Believing that every such application of poison is injurious to the tree, whether the effects are immediately visible or not, I would urge extreme caution in using no more poison than is absolutely necessary to destroy the insects, and equal care in spraying to distribute evenly, so that every part of the tree receives only its proper share. If the trees are sprayed north and south the first time, by all means let the second spraying be done east and west, the better to distribute the poison equally; the first spraying not to be done until after the bloom has fallen, *to save the bees;* the second, ten days later.

Scattered as our fruit growers are all over our State, probably most of them purchase their poisons of retail dealers, and when everything else is so adulterated, how are they to determine whether their Paris Green or London Purple has five, or fifteen, or thirty per cent. of arsenious acid, or whether their arsenic is fifty or one hundred per cent. pure? Until we have some definite mode of ascertaining the strength of our different poisons used, we need not wonder at the widely different results from the same prescription.

Instead of this haphazard mode of proceedure, I venture to suggest that the members of this Society (either individually or collectively) might, through one of their officers or agents, contract with some responsible wholesale druggist for such poisons as might be ordered (cash to accompany order) within a given time, to be put up in five, ten or twenty-five pound parcels, actual weight and exact per cent. of arsenious acid to be guaranteed in "plain English" on the outside of every parcel, and sent direct by express to wherever ordered. Whether the cost would be a few cents more or less to each individual would be a matter of small consequence compared with the loss of his crop from using an insufficient amount of the poison, or (what is more likely to happen) his *trees* are injured by an overdose.

In either case the mistake is discovered too late to be remedied, and the next experiment is quite as likely to be unsatisfactory for want of the same knowledge.

Hoping these few suggestions may receive your favoroble consideration, and that you will remember the thousands of orchardists in our State who lose at least one-half of all their fruit by injurious insects, I hope this season will not be allowed to close without pointing out clearly how so great a loss may be safely averted.

DISCUSSION.

Mr. Dennis—I have seen statements with regard to foliage being killed late in the season when the leaves were more mature.

I have thought that the facts in the case were different from that, and I want to know whether I am right or wrong.

Mr. Green—This matter of spraying apple trees I have taken much interest in. Last season I sprayed my trees when in bloom, using a solution of London Purple—one pound of purple to one hundred gallons of water and I had perfect apples; not five per cent. of imperfect ones, and my apples kept first rate. As to the idea of spraying the tree after the bloom falls, I don't know about it. This year I was unable to attend to my work when the trees were in bloom, and I did not get them sprayed, and my apples are poor, but as they were all bad in that part of the country, I do not know whether it was on account of not spraying or not. I have felt great interest in this matter of preserving our trees; apple trees are dying all over the State, and not ten per cent. of the trees alive on my place ten years ago are alive now. I believe there is a disease passing over our part of the State and passing westward. I believe it is something similar to the blood poisoning of the animal, and I believe that where a limb is taken off and the bacteria gets into the tree, disease is produced. I have not time to discuss that fully, but I furnished a paper last year published in the proceedings of the Central Society, and I wish our experimental stations would take the matter up and see what there is in it. The trees in our part of the State which have been out only three or four years are as much affected as the older ones. The question is asked, did the spraying affect the trees badly! It did not. Occasionally the trees seemed a little scorched.

Mr. Speer—As to using arsenical poisons it is well to be very careful. A pound of arsenic to four hundred gallons of water is entirely too strong; a pound to one thousand gallons is fully strong enough. I have burned the foliage with too strong a solution. However, there was so much rain this season that it is hard to say what the result of spraying might have been. The spraying was very unsatisfactory to me this year, but I thought I saw less of the codling moth where I used spray than on my checks. Another point is, you want to use a very fine spray; a weak solution of arsenic put on foliage so that it comes in coarse, large drops, will burn the foliage, while a fine spray of the same solution would not.

Mr. Webster—I am satisfied that many reports of arsenical poisoning have been misleading. Most of us use London Purple. We use one-half pound of the purple to one hundred and twenty gallons of water. In regard to the strength of the purple, we find that when it is fresh it is stronger. Those who have used it when new, find one-fourth of a pound to eighty gallons of water sufficient, and that is too strong for peaches. Poisons will answer the purpose a great deal weaker than we first supposed. I think as to burning the foliage, the clearness of the atmosphere has much to do with it. Our best results have been on cloudy, still days, and I believe that rightly applied two ounces of purple to a barrel of water is plenty.

Mr. Shank—I think also, much depends on how you put the spray on. I think it only needs a kind of mist or smoke. I find further, that a little pump called the "daisy" is the most practicable. It only costs $2, and I can take that and a pailful of water and spray a tree twenty-five years old to perfection, and you don't have to haul so much water. I think that one-half pound of London Purple is about right for two hundred gallons of water. I do not think it is worth while to spray on the blossoms. I will say, for apples put it on when they are about the size of peas.

Mr. Cadwell—The first I sprayed was three years ago. I knew nothing about it and thought I would try it. We used Paris Green the first year, using one pound to one hundred gallons of water and burned the foliage a little. We were pretty well satisfied with it. The canker-worm had got into the orchard and we found it necessary to do something. We commenced to spray about the time the blossoms began to fall, and having seventy-five acres to spray, we were quite awhile at it, although some days we sprayed as many as twenty acres. From the size of the trees, some parts of the orchard required more of the solution than other parts. We used as high as twelve hundred to fifteen hundred gallons of water in a day. At the end of the season the moth were scarce and the canker-worm had disappeared; but the canker-worm appeared the next season, except where we sprayed first; in that locality we have not been bothered with it again. The second season we used London Purple, as we had heard of the danger in handling Paris Green. We bought the purple of

the same firm, (Richardson Drug Co., St. Louis,) and we used about the same amount of purple as of the other. That year, also, we had few worms. Of course we could find them by hunting, but they were rare, and it was hard to find their work in the orchard. If I could always spray just when I wish, it would be just when the blossom has done its work and begins to drop. As to injury to the foliage, we have at times injured it, apparently, but we could not tell why, as it would be a few trees in spots; however, we could not see that where the foliage was scalded that the trees were damaged. Last season a druggist came to me and others in the neighborhood, and said as we used a large amount of poisons he would like to get it for us, that he could get it a little cheaper, and all that, and so we ordered through him. We got the purple and used it a little weaker than we did the first year. We also had a little of the first year's purple left and we used that on an eighty-acre orchard about ten miles from the main orchard. We commenced the spraying work with that old material. There the canker-worm died as before, and when we gathered the fruit this fall it was far freer than other orchards in that locality. On the second of May we commenced on the large orchard, and we begun that with the fresh purple, and were at it longer on account of the rains, for if we saw an appearance of rain we quit for fear of its washing off, so that we were up to about the 16th of the month getting done. We saw few trees with the foliage burned—perhaps a half dozen in that season—but we had plenty of codling moth. We could not see that the application did any good. The eighty-acre orchard was benefited, for there we could see the canker-worms dead under the trees. We came to the conclusion that bogus material was sold to us, so that it is very essential to see that we have uniform poisons. Our trees have grown well. In our locality the blue grass takes the orchards if they are not cultivated, though we don't like to plow too much. We are on the Illinois bluffs—the one hundred and seventy-five acres—and we don't cultivate that as much as we would like to do, on account of the washing of the soil. We believe that apple growing pays, and we expect six or seven thousand barrels of apples in one orchard next year from the present condition of the trees.

HARVESTING AND MARKETING APPLES.

BY J. R. WILLIAMS, ST. LOUIS.

Mr. President, Ladies and Gentlemen:

Those who study the influence of occupation on character generally agree in this: That the calling of the husbandman is especially conducive to good morals. In theory all farmers are honest. The dweller in town who, on opening his barrel of apples, finds it contains, about the region of the equator, nothing but "culls," or finds his berry boxes built in flats with the lower story unoccupied, will be apt to think this theory entirely too poetic. However this may be, it is not thought to be the province of this paper to consider the subject of "Harvesting and Marketing Apples" from the moral standpoint. My purpose is to consider it from the standpoint of the counting-room; that is, to make the balance sheet, at the close of the season, show a fair margin of profit.

Before passing to the more practical part of the discussion, allow me to point out some causes of loss in this business that do not seem to me to have received sufficient attention. We have, all of us, learned that it does not pay to try to deceive our customers by smuggling in worthless fruit under cover of the good, in the vain hope that the cheat will not be discovered. We have learned that it does not pay to put large and small apples of the same kind together. A fine apple looks better alone than with a finer apple beside it. We have learned that stained and unsightly packages are expensive luxuries. We have not—some of us have not—learned that added cost does not necessarily mean added value; that is, market value.

Many men have a vague idea that fruit, small and misshapen in the orchard, may, by putting upon it the cost of labor in packing, the cost of packages, the cost of transportation, &c., become grateful for this kind treatment and reward its benefactor by coming out of the packages large, smooth and fair to see. It seems incredible that men will entertain such whimsical notions about business matters, but we frequently see them packing, with great care, fruit which they declare to be "hardly worth picking."

Again, many imagine that in the city where no fruit grows, any kind is eagerly sought after and even the poorest specimens find a ready sale. The truth is that many growers have learned that it pays to send only the best to market, hence the city housewife knows as much as her country cousin about good fruit, and is as unwilling to accept any other.

Some of the suggestions I have to offer are the outgrowth of several years experience in a manufacturing business. Such a

business tends to develop a class of ideas somewhat different from those usually held by the farmer. Some of these ideas I have found useful for application to the business of farming and fruit-raising. I offer a single example: We, at our shops, find that it does not pay to turn out any work that has any unsightliness in appearance to apologize for, or any defects in material or workmanship to be corrected. If any of our products develop unforseen defects we are anxious, at any cost, to replace them with work that is satisfactory to our customer; our idea being, to keep our customers in such a frame of mind that he is willing to buy our goods again and to recommend them to his neighbors. If, in a manufacturing business, it pays to take such pains to please "the trade," I claim that it will, also, pay in the apple business. Now as to suggestions in detail:

HARVESTING.

Before picking, allow your apples to get ripe enough to have a good color. Determine first of all that you will not send to a distant market anything that grades below "choice." Instruct the pickers to waste no time nor labor on specimens they know to be below this grade. It does not pay to hand-pick culls merely to give the tree a tidy appearance. The small specimens of early varieties, if allowed to remain on the trees, will grow to full size.

If baskets are used, have them lined with old carpet or some soft material. Many pickers use a bag slung over their shoulder, which I think preferable to a basket. Do not pick apples while they are wet, nor allow them to get wet after you take them in hand. Do not put them on the ground, but in boxes, for conveyance to the place of packing. Bushel boxes measuring seventeen and one-half inches long, fourteen inches wide, and twelve inches deep with gains cut in the ends for handles are most convenient for this purpose, as they fit into a farm wagon box and are easily lifted in and out. Provide each picker with a piece of chalk with which to mark his name or number on each box he fills. This relieves the man who collects the boxes from the necessity of keeping any record of his load and admits of the record-keeping all being done at the place of packing.

PACKING.

Make it a rule to pack your own fruit so that if you have to consign it to some distant market, you need not fear the competition of other packers.

Use only new, clean barrels of full three bushel measure. At your place of packing, whether it be barn, shed or tent, provide a bench or trestle of proper height to bring the top of the boxes on a level with the top of a barrel; thus most of the apples can be put directly into the barrel without the use of a basket.

When a basket is used, use one that will turn inside a barrel and have it lined as mentioned above. Remember that apples should be handled as little as possible, and as careful as if they were eggs. They should therefore be packed as soon after picking as possible. It is claimed by some that apples should be put into bins or piles to sweat and shrink before packing, but the injury caused by the extra handling more than outweighs that caused by the sweating, and if they are pressed into the barrels as they should be, they will not shrink enough to allow any of them to "get away."

Put up every package as if you meant it for your own use. The proper method of filling and heading is well known and needs no description here. Mark your name neatly on each barrel.

SELLING.

Sell your apples when they are ready for market. I hold that it is the business of the farmer and orchardist to produce crops, and the greater singleness of purpose with which he devotes himself to that business, the better it will be for him. Watching markets and distributing products to supply those markets is a business in itself. There is always sufficient competition among dealers to enable the producer to get what his crop is worth if he lets it be known that he has something to sell.

If possible, sell your fruit at home. Consigning fruit to commission merchants is apt to be unsatisfactory to all concerned. Many commission merchants are entirely responsible and trustworthy, and many are not. The large commercial houses have their keen and vigilant "credit men" who are constantly on the alert to detect any decline in the standing of their customers, but the man in his orchard has very limited means of informing himself on these matters. If you have no more than a hundred barrels you will have no difficulty in inducing buyers to visit and inspect your crop, especially if you have been marketing previous crops in the proper manner.

We have found it a good plan when several buyers are after the crop, to set a day convenient for all, on which we agree to sell the crop without reserve. Then when the manner of packing, the terms of payment, etc., are fully understood by all, we invite sealed bids for the crop, the highest bidder taking it.

If you have to send your apples to market by rail, insist on having a clean car. Lay the barrels on the side lengthwise of the car, covering the entire floor with the first layer, break joints with the second layer, and so on until the car is full. When that car is unloaded, if you were not already supplied, you would be willing to buy some of those apples yourself.

DISCUSSION.

Mr. Brown—I have not seen many men heading up apples, and I want to know whether they put their best apples at the bottom or not.

Mr. Williams—We are not picking any but choice apples, and of course putting smooth apples at the bottom; but they are not better than the rest.

Mr. Leeper—I put my best apples in the bottom, and my smallest apples are in the middle of the barrel.

Mr. Cadwell—In picking our apples, we lay them on the ground, because we can get away with them with less labor, but we do not put them on the bare ground if we can help it. If there is any grass in the orchard, we put that under them. Then we can have the sorters get around the pile and handle them with speed. As to putting the best apples in the bottom, if you do not you will get scolded by the commission men; they will tell you that they want to see your best apples. The purchaser expects the best apples where he can see them. It is not every man who buys a barrel of apples who is going to look at both ends of the barrel, but if he is buying a car-load, he will. If the packer uniformly puts his apples up in an honest manner, and the buyer knows him, his goods will pass better on the market than they will if his character as a packer is not known. In your treatment of the orchard, if you use the spray and prune well, keeping all the dead wood cut out, your percentage of number ones will be much larger than if you neglect the trees. This thing of packing from the trees was not practiced until five or six years ago, but experience has shown that leaving the apples long in piles has a tendency to discolor the fruit, and the policy now is to pack from the tree, and thus you preserve the color of the fruit. As to selling to commission men, if you take the reports, or, rather, the circulars certain to be sent you from Chicago and elsewhere, or if you listen to what they tell you, you can get rid of your apples, and your money, too. I can point out firms that will give you very little for your apples, and others who will do as well for you as your own brother would. You need not be robbed, if you will only inform yourself as to who will handle them properly. Another thing: If you will store in cold storage, those who want number one fruit won't object

much to the charge for cold storage. And if you will let such parties know about your fruit, they will come and see it, and will give you a fair price for it. If you have a lot of fruit where not more than one-fourth is number one, just pack it straight. Don't try to take number ones at all, but just pick them and send them off, and if you don't get much money for them don't grumble, but try to do better next time.

Mr. Williams—Since I wrote that paper I saw a notice in the *Farmers' Review* about forming a company to distribute oranges throughout the Northwest, and I wrote to a party at Jacksonville, Fla., about it. Their plan is to group together the fruit growers of a section, so as to bring the buyers to the fruit. Now, it seems to me it might be well to get the growers together in a section of the country—as in the neighborhood of Centralia or Jacksonville—as it is better to sell apples in large than in small lots.

Mr. Leeper—I think the suggestion a good one. I know an orange company which has been paying a man $1,200 a year for buying oranges in Florida, and I think it would pay the farmers of Illinois to band together to sell their products.

REPORT OF AWARDING COMMITTEE—CLASS I, NORTHERN ILLINOIS.

Best Five Varieties of Winter Apples for Market—First premium, Jacob Christian, Mt. Carroll; Second, L. R. Bryant, Princeton.

Best Five Varieties of Winter Apples for Family Use—First premium, Jacob Christian, Mt. Carroll; Second, S. G. Minkler, Oswego.

Best Three Varieties of Fall Apples for Market—First premium, Jacob Christian, Mt. Carroll; Second, S. G. Minkler, Oswego.

Best Three Varieties Fall Apples for Family Use—First premium, Jacob Christian, Mt. Carroll.

Best Plate Fall Apples for Market—First premium, Jacob Christian, Mt. Carroll; Second, L. R. Bryant, Princeton.

Best Plate Winter Apples for Family Use—First premium, L. R. Bryant, Princeton; Second, Jacob Christian, Mt. Carroll.

Best Plate Fall Apples for Market—First premium, Jacob Christian, Mt. Carroll.

Best Plate Fall Apples for Family Use—First premium, Jacob Christian, Mt. Carroll; Second, L. R. Bryant, Princeton.

Best Plate Ben Davis—First premium, L. R. Bryant, Princeton.

Best Plate Willow Twig—First premium, J. V. Cotta, Nursery; Second, Jacob Christian, Mt. Carroll.

Best Plate Jonathan—First premium, S. G. Minkler, Oswego; Second, L. R. Bryant, Princeton.

Best Plate Grimes Golden—First premium, Jacob Christian, Mt. Carroll; Second, S. G. Minkler, Oswego.

Best Plate Minkler—First premium, L. R. Bryant, Princeton; Second, S. G. Minkler, Oswego.

Best Plate Domine—First premium, J. V. Cotta, Nursery; Second, S. G. Minkler, Oswego.

Best Plate Wealthy—First premium, Jacob Christian, Mt. Carroll.

Best Plate Maiden's Blush—First premium, Jacob Christian, Mt. Carroll; Second, S. G. Minkler.

Best Plate Snow—First premium, Jacob Christian, Mount Carroll; Second, S. G. Minkler, Oswego.

Best Plate Red Canada—First premium, L. R. Bryant, Princeton.

Best Plate Northern Spy—First premium, L. R. Bryant, Princeton; Second, S. G. Minkler, Oswego.

Best Plate Cayuga Red Streak—First premium, S. G. Minkler, Oswego.

F. C. Johnson, *Committee.*

REPORT OF AWARDING COMMITTEE—CLASS II, CENTRAL ILLINOIS.

Best Five Varieties Winter Apples for Market—First premium, A. C. Hammond, Warsaw; Second, J. T. Johnson, Warsaw.

Best Five Varieties Winter Apples for Family Use—First premium, C. B. Rockwell, Hamilton; Second, J. J. Cart, Morrisonville.

Best Three Varieties Fall Apples for Market—First premium, A. C. Hammond, Warsaw; Second, C. B. Rockwell, Hamilton.

Best Three Varieties Fall Apples for Family Use—First premium, Benjamin Buckman, Farmingdale; Second, C. B. Rockwell, Hamilton.

Best Plate Winter Apples for Market—First premium, Benjamin Buckman, Farmingdale; Second, F. I. Mann, Gilman.

Best Plate Winter Apples for Family Use—First premium, Benjamin Buckman, Farmingdale; Second, W. E. Jones, Lincoln.

Best Plate Fall Apples For Market—First premium, C. B. Rockwell, Hamilton; Second, Benjamin Buckman, Farmingdale.

Best Plate Fall Apples for Family Use—First premium, Benjamin Buckman, Farmingdale; Second, C. B. Rockwell, Hamilton.

Best Plate Ben Davis—First premium, J. T. Johnson, Warsaw; Second, J. J. Cart, Morrisonville.

Best Plate Willow Twig—First premium, F. I. Mann, Gilman; Second, J. J. Cart, Morrisonville.

Best Plate Rome Beauty—First premium, J. J. Cart, Morrisonville.

Best Plate Jonathan—First premium, J. J. Cart, Morrisonville; Second, Benjamin Buckman, Farmingdale.

Best Plate Grimes Golden—First premium, Benjamin Buckman, Farmingdale; Second, F. I. Mann, Gilman.

Best Plate Minkler—First premium, J. J. Cart, Morrisonville; Second, Benjamin Buckman, Farmingdale.

Best Plate Yellow Belleflower—First premium, Benjamin Buckman, Farmingdale; Second, J. J. Cart, Morrisonville.

Best Plate Winesap—First premium, C. B. Rockwell, Hamilton.

Best Plate Northern Spy—First premium, W. E. Jones, Lincoln; Second, Benjamin Buckman, Farmingdale.

Best Plate Bailey's Sweet—First, J. J. Cart, Morrisonville.

Best Plate Hubbardston Nonesuch—First premium, A. C. Hammond, Warsaw.

FRANK CADWELL, *Committee.*

REPORT OF AWARDING COMMITTEE—CLASS III, SOUTHERN ILLINOIS.

Best Five Varieties Winter Apples for Market—First premium, J. Webster, Centralia; Second, E. A. Riehl, Alton.

Best Five Varieties Winter Apples for Family Use—First premium, R. C. Berry, Batchtown.

Best Three Varieties Fall Apples for Market—First premium, J. Webster, Centralia; Second, R. C. Berry, Batchtown.

Best Three Varieties Fall Apples for Family Use—First premium, J. Webster, Centralia.

Best Plate Winter Apples for Market—First premium, E. A. Riehl, Alton; Second, J. Webster, Centralia.

Best Plate Winter Apples for Family Use—First premium, J. Webster, Centralia; Second, J. W. Parrill, Farina.

Best Plate Fall Apples for Market—First premium, J. Webster, Centralia; Second, R. C. Berry, Batchtown.

Best Plate Fall Apples for Family Use—First premium, R. C. Berry, Batchtown; Second, E. A. Riehl, Alton.

Best Plate Ben Davis—First premium, J. Webster, Centralia; Second, R. C. Berry, Batchtown.

Best Plate Willow Twig—First premium, R. C. Berry, Batchtown; Second, J. Webster, Centralia.

Best Plate Rome Beauty—First premium, J. Webster, Centralia; Second, R. C. Berry, Batchtown.

Best Plate Jonathan—First premium, J. Webster, Centralia; Second, R. C. Berry, Batchtown.

Best Plate Domine—First premium, R. C. Berry, Batchtown.

Best Plate Newtown Pippin—First premium, J. Webster, Centralia; Second, E. A. Riehl, Alton.

Best Plate Minkler—First premium, J. Webster, Centralia.

Best Plate Grimes Golden—First premium, J. Webster, Centralia.

Best Plate Winesap—First premium, J. Webster, Centralia; Second, Jacob Auer, Deer Plains.

Best Plate Rawl's Janet—First premium, R. C. Berry, Batchtown; Second, J. W. Parrill, Farina.

P. E. VANDENBERG, *Committee.*

REPORT OF AWARDING COMMITTEE—CLASS V. MISCELLANEOUS.

Best Collection of Pears—First premium, Mrs. P. F. Connable, Hamilton; Second, A. C. Hammond, Warsaw.

Best Collection of Grapes—First premium, Benjamin Buckman, Farmingdale; Second, Mrs. N. Lyon, Hamilton.

Best and most Artistic Display of Fruits, Flowers and Vegetables—First premium, C. B. Rockwell, Hamilton.

Best Collection of Apples not to Exceed Twenty-five Varieties—First premium, Benjamin Buckman, Farmingdale; Second, S. G. Minkler, Oswego.

CHARLES PATTERSON, Kirksville, Mo., *Committee.*

REPORT OF AWARDING COMMITTEE—CLASS VI, VEGETABLES.

Best Half-peck Early Potatoes—First premium, F. W. Poscharsky, Princeton; Second, S. G. Minkler, Oswego.

Best Half-peck Potatoes for Winter and Spring—First premium, F. W. Poscharsky, Princeton; Second, F. W. Poscharsky, Princeton.

Best Half-peck Onions from Seed—First premium, G. W. McCleur, Champaign; Second, E. A. Riehl, Alton.

Best Half-peck Onions Grown from Sets—First premium, E. A. Riehl, Alton; Second, C. B. Rockwell, Hamilton.

Best Three Heads Celery—Second premium, F. W. Poscharsky, Princeton.

Best Half-peck Sweet Potatoes—First premium, E. A. Riehl, Alton; Second, E. A. Riehl, Alton.

Best Half-Peck Turnips—First premium, E. A. Riehl, Alton.

Best Half-Peck Parsnips—First premium, C. B. Rockwell, Hamilton; Second, Miss Clara Smith, Hamilton.

Best Half-Peck Carrots—First premium, C. B. Rockwell, Hamilton.

Best Winter Squash—First premium, C. B. Rockwell, Hamilton; Second F. W. Poscharsky, Princeton.

Best Sample of Salsify—First premium, E. A. Riehl, Alton.

Best Sample of Winter Radish—First premium, F. W. Poscharsky, Princeton.

J. M. PEARSON, *Committee.*

REPORT OF AWARDING COMMITTEE—CLASS VII, CANNED FRUITS.

Best Jar Red Raspberries—First premium, C. B. Rockwell, Hamilton.

Best Jar Black Raspberries---First premium, C. B. Rockwell, Hamilton.

Best Jar Cherries---First premium, Miss Clara Smith, Hamilton.

Best Jar Plums, &c.---First premium, C. B. Rockwell, Hamilton.

Best Display of Canned Fruits and Jellies---First premium, C. B. Rockwell, Hamilton; Second, Louis Duchesne, Lacon.

MRS. ARTHUR BRYANT,
MRS. HENRY M. DUNLAP,
MRS. A. C. HAMMOND,
Committee.

DISCUSSION.

Mr. Johnson—There is much uncertainty in the statements made by the committees. You will notice in the reports that the kinds of apples to which the premiums are awarded are not given.

Mr. Bryant—There has been considerable complaint as to the enforcement of rule seven, and I would suggest that the words in rule seven: "or no rewards will be made" shall be changed to "or the fruit will not be entered." Motion carried.

Adjourned.

THURSDAY AFTERNOON.

HOW SHALL THE FRUIT GROWER MAINTAIN THE FERTILITY OF HIS SOIL.

BY E. A. RIEHL.

The question as stated implies that fruit growing exhausts the soil. I think, however, that fruit growing exhausts the soil far less than common farming. To be sure, if the same ground be kept a long time in the same fruit, be it strawberries, raspberries, blackberries or any other fruit, the crops will become less

and less, and finally fail altogether; not because the soil has become exhausted of the elements of fertility, but because the plants have become enfeebled by age, and are infested by the insects and fungoid diseases peculiar to them. I believe with proper rotation, the occasional turning under of green crops, and the application of the barnyard manure made on the farm, a fruit farm can be kept up indefinitely. I have experimented a little with artificial fertilizers, but so far have not found them to pay on my soil, the lowest formation of the Mississippi valley. In '87 I fertilized alternate rows of sweet potatoes with phosphate and ground bone, putting it on at the rate of about five hundred pounds per acre. At digging time these rows did not show the slightest increase, the yield being eleven to twelve bushels per row in the fertilized and unfertilized, alike. In the fall of '88 I applied finely ground bone, phosphate and castoria on alternate rows of strawberries leaving rows on each side without any fertilizers. Last spring the rows fertilized made more foliage and the berries were larger, but later than where not fertilized. The castoria gave the best result, the ground bone the next and the phosphate the least. It is probable that the bone will show the best result next spring. The phosphate and ground bone cost about $40 per ton in St. Louis, and the castoria $15 per ton, so that for the result so far obtained the castoria is by far the cheapest and best. Barnyard manure is the cheapest and best when made on the place, but have my doubts about its paying to haul it far. I save and use all I can make, giving the ground a heavy coat as far as the manure on hand will go, as I find this method to give better results and for a greater length of time than light applications. In fact, light applications produce but little effect, and that little very soon disappears. I think I can still see the effect of the manure where applied heavily more than ten years ago. But I do not keep enough stock to go all over my land in this way, and hardly think many fruit growers are so situated as to do so. What to do to fill out this shortage may be what I am expected to tell. My soil has an abundance of lime and potash, and it is time and money thrown away to apply fertilizers containing them. I would not haul the best ashes ever made a half mile, if to be had for the hauling. What my soil needs is decomposed vegetable matter. The best is clover, but the southern cow-pea; buckwheat and rye are also good; an occasional crop of these turned under will keep our soil in first class condition. When I bought my place twenty-six years ago, there was on it a field that had been cleared long before; this was in strawberries in '85 and '86. In June of '86 as soon as the crop was picked the field was plowed, turning under the old strawberry plants and the old mulch of straw, and sown to cow-peas; these made a heavy growth and were turned under in the fall. The ground was then sown to rye, which was also turned under in the following

spring, when about three feet high; and as soon as sufficiently decayed was ridged and planted to sweet potatoes, which yielded about two hundred and twenty-five bushels per acre. In '88 it was again planted to sweet potatoes and produced equally well. Last spring this field was again planted to strawberries, which are as fine a stand, and promise as good a crop this season as any I have ever grown. In 1891, as soon as the crop is off I propose to repeat this proceeding, and by so doing expect to keep the land in good condition, and I think any one on similar soil can do likewise.

CULTIVATING AND MARKETING TOMATOES AND SWEET POTATOES.

BY T. E. GOODRICH, COBDEN.

Tomatoes—Plant in rows in hot bed, one and one-half ounces of seed for each 1000 plants desired. Here we plant from February 3d to March 1st. When the plants begin to crowd or show the second pair of leaves, transplant to three inches apart each way. When the plants become large enough for the leaves to reach across the rows, transplant to six inches. If early plants are desired an extra transplanting will be beneficial.

To prepare the plants for setting in the field, cut the soil both ways in the center of the rows with a long butcher knife, after which the plants can be removed with a six inch block of earth, by using a spade.

Plants will block out better if the ground is thoroughly drenched with water the day before. Set in the field five feet apart each way, and cultivate as for corn. Stake and tie as often as necessary.

The usual packages for shipping tomatoes are fourth bushel boxes, and half bushel crates containing four baskets.

Sweet Potatoes—In selecting seed reject all crooked and unusually long potatoes, and plant those showing a tendency to become short and larger in the center, with a rapid taper towards each end. Place in a hot bed horizontally one-half inch apart, drench with water, cover three inches with earth, then one and a half inches of sand. When the plants are four inches above ground, they are large enough to pull for sets. Ridge the ground with a two-horse plow, four feet or less apart, and with a spade plant on the ridges, eighteen inches apart. Keep free from weeds and grass. A sweet potato scraper, drawn by a mule, will be of great assistance until the vines cover the ground, after which little attention will be required. Digging can be done with a spade, if only a small quantity is grown, or with a plow with the mould board removed, and a rolling cutter to cut the vines.

I use a digger, consisting of two rolling cutters and two plows, throwing the dirt in opposite directions, and two lifters that pass under the ridge, leaving the hills to be easily lifted out by hand.

The potatoes designed for table use are separated from the seed, and both corded in bins in the potato house. Great care should be observed in handling to prevent marking. A slight bruise, or a scratch of a finger nail, imperceptible at first, will become black and unsightly, and greatly impair the sale.

No vegetable depends so much on its good looks for a quick sale at a high price as a sweet potato.

The house is kept as near a uniform temperature of fifty to fifty-five degrees as possible.

The crop is marketable from November to April in barrels and kegs lined with paper to keep out the cold, and shipped in refrigerator cars.

DISCUSSION.

Mr. Gaston—The tomato is a great success with us at Lacon. We have had one hundred acres planted out, and the farmers have raised as high as three hundred bushels to the acre. Last year they got twenty-five cents a bushel and this year twenty cents.

Mr. Budlong—If I understand the gentleman who gave us the paper, he transfers directly from the seed-bed and puts the plants in the ground three inches apart. I have the best success by planting first in the seed-bed and then using four inch pots. They are not expensive; they can be had for about $8 per thousand. With those we can take the plants into the field and transplant without danger of losing them, although the sun may shine brightly, provided you do not let them stand too long in the pots. If you let them stay too long, there will be only a mass of roots in the pots, and then when you transplant there will not be moisture enough to sustain the plant. The better way in such a case is to break the ball of earth, and that retards the taking out of moisture so readily. Tomatoes, in my vicinity, if set out in the ordinary way, in two or three days would, at least one half of them, be cut off by the cut worm.

Mr. Riehl—What do you do with the cut worm?

Mr. Budlong—I don't do anything that entirely eradicates it, but I have less trouble than formerly. I raise tomatoes on sandy soil, principally. For some later varieties, I use wetter soil. Some

twenty years ago I read an article written by a woman, and that gave me more information than I have ever got any where else about the cut worm. It stated that the egg was deposited in August, and one peculiarity was, the eggs were deposited only on poor land. Rich land seems to be offensive to the fly. I was fixed for that, as I was on poor land. Another thing was that when the grub hatched, it went right into the ground and did not feed in the fall at all, and of course the best way to dispose of him was to plow in the fall, and if there was freezing weather in the fall it would finish him. Further, I found that if the grub was in the ground when the warm weather came he wanted something to eat. And I found that if I allowed the tomato ground to grow up in weeds, and then just before planting, plowed under the weeds, I was furnishing him just the food he wanted. So I do not allow any weeds to grow on the ground. I take as much pains to keep the ground that I do not want to plant early, free of weeds, as I do the ground I am planting. So I am not much troubled with the worm. That method is the best, and in fact, the only method I know of to get rid of the cut worm.

Mr. Hay—Take your strawberry boxes to the tomato field, and cover your plants with them; you will be astonished at the good they will do. On behalf of all those who are going east on the next train, I want to thank the people who furnished us a carriage to get here. Next, I want to thank the ladies who decorated this hall. And I want to thank the good people of Hamilton, by whom we have been entertained so nicely since we have been here.

Mr. Dennis—I wish to offer a resolution here that I want a vote taken on before these parties leave.

Resolved, That it is the opinion of this Society that Chicago is the best place to hold the World's Fair in 1892. Therefore, we would urge our members to use their influence with our Senators and Representatives to locate said World's Fair at Chicago.

Resolution adopted.

THOUGHTS FOR THE FUTURE.

BY MRS. E. A. BLACKSTONE, LACON.

However much we may wish to put off the inevitable, or to drive away the truth that stands at the front of all others, nevertheless the Nation's greatest sorrow is upon us. It has shapened into a prohibition measure and demands to be met; it asks, "Am I my brother's keeper," and answers, "You are."

Therefore as tillers of fruit and edibles, I would stir up the pure minded of this Convention to the pleasing task of action.

The field is wide, and even now, laid open as never before for future horticulturists to work; much depends upon them for the peace, pleasure and happiness of all classes.

The very earth calls loud and strong, "Dig me, plant me; my waste places are desolate, and my people are clamorous who possess me; I am yielding annually an increase which satisfies not an appetite, but destroys."

We are lovers of the delicious, lovers of the excellent and of the beautiful; if then we substitute that which is pleasing who shall demure?

Truly horticulturists may be called philanthropists, and he who plants most and well, the greatest benefactor of the public.

The demand is great, the supply scant. Professionals are not meeting the wants, who then is to give the increase desired? Who cannot be an amateur in a small way? In this ample prairie State none need be without fruit. That is a beautiful law in some places: all must plant the seed by the wayside: it is a sweet lesson to teach young children.

Again, I insist as in vegetable gardening, soil must be rich, to gain good results, all kinds of trees must be well cultivated, opening the soil in early spring; and heavy mulching is always productive of large and luscious fruit, especially peaches.

If something could be said or done at this convention to urge people to double their efforts in planting trees next spring, and then urge the necessity of good care, much would be accomplished, for, without trees, we might as well expect figs from thistles.

You may smile, for I smile as I write, as I see a visionary picture of a land flooded with fruit appeasing the appetites of the millions, and satisfying the cravings of our hungry boys who shall do our voting in the nineteenth century. Verily we shall all be looking forward to the Tree of all trees, the Tree of Life bearing twelve kinds, yielding her fruit every month.

Mr. McKinney---A fine collection of fruit from Calhoun County, which has been delayed in transit, has just arrived, and I move

that a special committee be appointed to examine it and report to the Society.

Motion carried and L. R. Bryant appointed.

NEW SMALL FRUITS.

BY H. K. VICKROY, NORMAL.

Mr. President, Ladies and Gentlemen:

I really have nothing new or valuable to report in the new small fruits. Those of recent introduction that I am testing, I have not fruited; therefore, I cannot give a just report. Among those that have been before the public for several years, the Warfield's No. 2, seems to be taking the lead, and, I think, is entitled to that place. This variety, aside from being a very desirable variety for home consumption, is an excellent shipper. I have seen no other variety, after being shipped long distances, open out so bright, keep so long, and hold its bright color. These are very desirable qualities in a market berry. The fruit is not so large as some of the other newer varieties, but is of very uniform size, which adds much to the appearance of any fruit.

Bubach's No. 5 is a very vigorous plant, free from blight or rust; and, in fact, the plant is all that can be desired. The fruit is large, of fine appearance, and of good quality. This variety has not been very productive in my vicinity. My experience with it is, that it is more productive the second and third years after planting than the first. Possibly, this variety may bear neglect better than some others, and produce good crops. I think it very desirable for family use.

Jessie is a good plant, but a very shy bearer; fruit very uneven in size, but of good quality. I have heard but few very favorable reports of this variety.

Haverland resembles Crescent in plant, and is very prolific. The fruit is as large as the Crescent, and fine in appearance, and of good quality. It is worthy of further trial.

The Itasca and Logan I have fruited, and can see nothing in them to recommend them. Fruit is uneven in size, which is very objectionable.

The Parker Earle I have not tried. It is highly recommended; and, if there is anything in a name, we know it will be a success anywhere.

The Burt proves to be the Capt. Jack; it is—well it is so good.

The Miami is a fine plant, but I have not fruited it.

The Eureka, Mammoth, Monmouth, Cloud, Ohio, Pearl and a host of others, will soon be dropped from the lists and forgotten.

I know little of the newer varieties of raspberrtes from personal experience. The Hilborn and Palmer, in the black caps, I think, are leading, and from what I have heard of them, I think worthy of extended trial.

I know of no variety of blackberry I could recommend in place of the older varieties.

Currants and gooseberries are not much grown in my neighborhood. The Fay Currant is not proving as prolific as anticipated.

I wrote to a number of prominent small fruit growers in different sections of this and other States, and have received answers from a few of them.

Mr. R. D. McGeehon, of Atlantic, Iowa, writes: "Yours of the 25th received. The frosts of last June destroyed all my small fruits, and I can say nothing about them from personal knowledge; but, from what others tell me, the Bubach's No. 5 and Warfield's No. 2 are a success wherever tried throughout the West. The Jessie is not, only in certain localities."

Mr. Benjamin Buckman, of Farmingdale, Ill., writes: "I can not send you any reports of new small fruits, for the reason that I never plant the new varieties until they are pretty well known to be valuable. I don't think the Jessie has come to stay, the way the frost cut the bloom in the spring. The old White Grape Currant has borne better than the Fay. I have half an acre of huckleberries. I don't know the variety. They are called here the 'High-Bushed.' They bore finely—very full—but are slow in coming into bearing."

Mr C. H. Cogswell, of Virden, Ill., writes: "The Agawam, Barnard, Erie and Ancient Briton blackberries have all given great promise, both in productiveness and quality of fruit. Last winter having been so mild furnished no test as to hardiness. The Agawam is a large and good berry, but suckers too freely. Erie has done very well so far. They don't sucker much. If they prove hardy, I think they will be quite an acquisition. The fruit is much larger and sweeter than Snyder, and has less core. The Jessie Strawberry made a fine, strong growth, and produced some fine, large fruit. Gandy is hardy, and a prolific runner and bearer, fruit nearly as large as the Jessie, but later; desirable. Warfield No. 2 produced the finest-appearing fruit, and of very uniform, even shape, with dark, glossy color, which make them very attractive. Bubach's No. 5 blossomed profusely, but set little fruit. Whether this was due to lack of proper fertilizers, or to late frosts and cold, protracted rains, I am not sure. I have fruited the Fay's Prolific Currant, which, undoubtedly, is a fine, showy currant, of good quality; but so far, does not seem to be a prolific bearer. During a protracted rainy spell, about the time of ripening, it showed signs of what appeared to be mildew. Industry Gooseberry bore but few spec-

imens, but they were large and fine. I might mention the huckleberry. Some years ago, I obtained some upland 'High-Bush' huckleberries from the Adirondack Mountains. This year they bore quite full, or, at least, some of them, and I feel inclined to increase my little patch."

Mr. Webster, of Centralia, writes: "The Big Bend Strawberry, a staminate variety, from St. Louis County, Mo., is promising well. It is of the Wilson type. It makes but few plants the first year; is a vigorous plant, with dark, healthy foliage. It makes very large stools. Woodruff also promises well. It is a fine variety to plant with Warfield's No. 2 and Crescent. Scott, a new staminate variety, is being largely planted here. It was found growing with Wilson and Crescent. I am very favorably impressed with its good qualities."

Matthew Crawford's report: "I think all small fruit growers should try a few of the new varieties. In so doing, you will derive a great deal of pleasure in watching them and anticipating something better than we have."

DISCUSSION.

Mr. Gaston---I fruited the Warfield this year, and I put a box in an open shed to see how it would keep, and it kept well, although it was the hottest kind of weather. I find, too, that it bears first-rate. I have Bubach's No. 5, which is a good bearer, but a poor shipper. I have adopted the Glendale for a late berry. I am disappointed in the Jessie, as it don't bear well enough.

NEW ORCHARD FRUITS.

BY W. H. CRAIN, VILLA RIDGE.

Mr. President, Ladies and Gentlemen of the Illinois State Horticultural Society:

I have been notified by our worthy Secretary of being placed on the list to furnish a report on new fruits. This subject I consider to be a very important one, and should be dealt with very cautiously, as all horticulturists know there has been more deception perpetrated by the introduction of new fruits than any other one thing in existence. And yet it is a necessary evil that horticulturists are compelled to give their patronage to, in order to maintain and improve our long list of fruits and berries. There are many things to be considered in planting new fruits. There are many honest men propagating new varieties of fruits, and recommending them to the public, who believe their fruit will prove just what it was on their experimental grounds, but when changed to some different climate, the purchaser, nine

times out of ten, only waits a time of patience, to meet another disappointment.

Many would say that experimental stations will cure all this, but that is another mistake. While we are free to confess that the experimental stations have been the source of bringing to light many valuable theories to enhance the interest of both agriculture and horticulture, and should have our hearty support for its further extension, when we consider the arena of Illinois —the difference in climate, and the many different soils contained therein—could we recommend a variety of apples grown at Galena, and valued highly for hardiness of tree, but with little regard to quality and size of fruit, to a fruit grower in the vicinity of Cairo, where any variety of apple stands the winter, and the points sought for are size of fruit, color, and freedom from speck or rot? Or, could we recommend for Northern Illinois a variety of apples grown very successfully in Southern Illinois, but with a very open, porous growth of wood, and tendency to hold its leaves and continue to grow until late in the season, with any good result therefrom?

While it is apparent to all fruit growers that many of our old standard varieties are deteriorating, and it is now very certain that some means will have to be adopted to revise our old varieties, or seek some new ones to take their places---in my opinion, the latter is the only certain way out --we must not be too hasty in grabbing up everything offered, or take all the fellow has, in order to get a corner on our neighbor. There are some varieties of fruits and berries that are adapted to extreme climates and many different soils, but such is not a general rule.

I would recommend that before investing very heavy in any new fruit, to first learn whether or not it has been tested in like soil and climate as that to which you are planting on. Too much care cannot be exercised in this matter, for if there is anything on this green earth that would make one of our large-hearted, whole-souled, good-natured horticulturists lose his good temper, it is to nurse, with the greatest care, some new and highly recommended strawberry, to be attacked by rust, or the berries turn to buttons, just at the time he expected to gather a crop of fine fruit; to have his pear trees blight about the first time they are well set with fruit; apples to speck and fall about the time the fruit is half matured; or peaches to become covered with rotten specks a day or two before the time he has arranged to commence shipping.

I beg leave to report the following list of those we think worthy of farther trial:

APPLES.

Mother---Tree, hardy, good grower; fruit, size medium, color, bright red, striped on yellow ground; free from rot, quality excellent.

Black Twig---Tree, a rapid, upright grower; twig coarse and dark; fruit, color and quality much like Winesap, but large.

Stump---A new variety here, has been fruiting three years; tree, good grower and hardy; fruit, very large; color, red striped; quality, excellent; season, Aug. 1st; a perfect beauty.

Picket's Late, Sparks, Terril's Late, Fink and Cash all fruited well this season, and have given good satifaction. Egyptian Queen continues to give us those fine specimens of fruit, but rather a shy bearer.

Crain's Spice---Fruited well this season, and continues to hold out in all its good qualities.

PEARS.

The Keifer and Le Conte still maintain their reputationas good growers; almost free from blight; the fruit generally smooth and fine in appearance: quality, only medium.

Koonce has proved, so far, to be entirely free from blight, and a good grower; fruit, medium in size; quality, good; season with Early Harvest.

PEACHES.

Elberta---Very large yellow free; hardy in bud; heavy bearer; good shipper; standard of excellency; season with Oldmixon.

Kilbourn ripens with Hale's Early; large red ad heres some to stone; hardy in bud; rots some in a wet season.

Reed's Golden---Large yellow free; good bearer; hardy in bud; good shipper; season with Early Crawford.

Hyatt---White, with red blush; size, medium; half cling; season, early; ripens irregular; quality, poor; not desirable.

Texas---A fine family peach; large, white free; very hardy in bud and a prolific bearer; ripens with Early York.

Endicott Seedling---A seedling from Oldmixon; large red, the shape of Oldmixon; free, but ripens with Hale's Early.

GRAPES.

Empire State---Early and a profuse bearer of the finest quality, equal to Deleware; good grower; fruit rots a little in wet seasons.

Moore's Diamond---A good grower; medium in size; heavy bearer; branches very large; quality of fruit, excellent.

Niagara---Did well the last two years; bunches and berries large and fine in appearance; quality only fair.

Downing---Good grower; shy bearer; fruit and bunches very large; quality good, but subject to mildew.

Pocklington---Slow grower; quality, poor; fruit and bunches very large; season late.

STRAWBERRIES.

In regard to the new varieties of strawberries grown here for the past three years, I will say that May King, Warfield and Jessie are the most favored. We have had a severe drouth here the past two seasons while the berries were maturing and the test has not been a fair one.

As to cherries, plums, raspberries and blackberries, we have nothing new worthy of reporting.

DISCUSSION.

Mr. Thomas---I have grown the Moore's Early for five years, and have had none of them rot. The Niagara rotted some this season, but I attributed that to the heavy rains we have had, and I advise in planting for market, to plant Moore's Early. It is very hardy, at least in five years I have not had them winter killed. It is not so productive as the Niagara, but it is fine and comes early.

Mr. Baxter---We have raised grapes at Nauvoo since 1858. We have 500 acres in grapes and have tried everything, but have not found anything to resist the rot. Moore's Early and Ives' Seedling are good grapes. Of the Norton, we raise a moderate crop in a fair season. Ives' Seedling beats everything on the list for a grape year after year. We have lost only one crop of that in nineteen years. The Early Victor is not giving satisfaction; it is not a vigorous grower, is a shy bearer and a small grape. The Empire State I have had for three years, and it has rotted the three years.

Mr. Riehl---As to the Moore's Early being a poor bearer, I will say that they need special treatment. There is some difficulty from using too large canes. The Keifer and Carver's Hybrid Pear are mentioned. In some places the Keifer has been run down on account of its quality, and I have done that myself; but this year I have grown some of the Keifer, and I took them from the stem and ripened them in drawers, and found them a very good pear, and other parties who came to my house and examined them pronounced them the same. They are very productive, and the only trouble I see is that they are likely to produce too much fruit, and when they overbear they are insipid. It is very large and beautiful, and such a pear as it is is a good thing, and I wish I had thousands of them growing. The

Garber is, perhaps, a better pear. I used to think so sure, but I am not so sure now. The Leconte I am disappointed in, in one respect. It was said to be free from blight, but in that respect it is the worst I have had. So far as winter is concerned I found them perfectly hardy. It is not a pear of Southern origin. It was started in Pennsylvania and taken to Georgia and then brought back here. It is hardy if grown in the right place; that is in the right latitude.

Mr. Dennis---Do you know anything about the Idaho?

Mr. Riehl---I have tasted it, and I think it is a pear of excellent quality.

Mr. Shank---I have had some experience with the Leconte, and to make a long story short, it is not worth anything. In relation to the Keifer, it is a poor grower, and has a tendency to overbear. For bearing and for quality it is about like the Ben Davis for an apple. I have had some experience with pears. I planted an orchard of them about sixteen years ago, and many of them are standing yet, and have borne for twelve years. I made the assertion once that to get anything out of the Lucretia dew-berry you had to take it where it is adapted to the conditions, and I say so yet. One of those is, it must be on poor ground. Two years in succession I have had the Pocklington and they have rotted.

Mr. Thomas—I have been growing pears a number of years and I don't put anything on the trees. I just plant them on the east side of a wall where they get no afternoon sun, and they do not blight. I tack them right up fast to the wall.

Mr. Dennis—We must remember that Mr. Thomas is very peculiarly situated between the Mississippi and Wyaconda rivers, and thus has low ground on two sides to draw off the moisture and prevent rot. I believe that the Keifer as a dwarf is not practicable, but if you want to plant it as a dwarf, plant it deep. I have it and it has grown eight or ten feet in the last two years.

Mr. Riehl—The fact of the matter is, that with these varieties the wood is of such a different structure to the quince, that they do not unite well with the quince stock. If you will first go and put on a pear that unites as well with the quince stock and

then put your graft on that, you will have no trouble. I find that it is a simple matter of starvation to put them directly on the quince.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

Your Committee, to which was referred the Address of the President, would respectfully report and recommend:

That the Annual Address of the President, at future meetings of this Society, be placed upon the programme for the first day of such meeting. As we regard well made points (as in the present address) should be presented and discussed while the attendance of members may be greatest.

That we consider the ground taken by our President in regard to the possibility of our having untested fruits in our own State, "that will fulfill all the requirements" of hardy winter apples for our State, as well as ideas conveyed in respect to a proper exhibit of fruits at the State Fair, with the suggestions for committees and remedies, as good, and recommend they be favorably considered by the Society.

In the matter of investigation of Russian varieties of fruits, we would recommend a correspondence of officers of our Society, with those of the State Societies of Indiana, Wisconsin and Minnesota and, if necessary, a personal conference upon the subject—that in case it was found best to ask Congressional aid, the matter would be in form for speedy action.

W. H. Ragan,
Geo. W. E. Cook,
S. R. Humphrey.

Adjourned.

THURSDAY EVENING.

FLOWERS AND FRUIT.

BY PROF. T. J. BURRILL, CHAMPAIGN.

The primary office of all flowers is the production of seed through the process of fertilization. The primary office of all seeds is the reproduction of plants through the process of generation. The primary office of all edible fruits is the dissemination of seeds through the agency of animals.

Here are three propositions which we will undertake to elaborate and explain. Before, however, entering upon the

direct discussion, it is proper to state that a fruit in the botanical sense is any ripened ovary and its contents. The pod, with the included seeds of a garden pea, is a true fruit, and so is a tomato and a cucumber; but the horticultural usage of the term is much more limited. This does not even include all edible fruits, for the three examples just given are called vegetables, while other true fruits, like wheat and buckwheat, are known as grains. In this article the term fruit is used in a sense closely similar to the usual horticultural interpretation, meaning all true fruits, or fruit-like structures, which are eaten by man and animals for the substances they contain, outside of the seeds themselves. This includes apples, peaches, plums, cherries, grapes, blackberries, raspberries, strawberries, melons, squashes, tomatoes, egg plants, &c. Even the red pepper is probably to be included, though I am not aware what animals feed upon them in their natural state.

Our task will be simplified if we consider the third proposition first. A little thought will suffice to show that the production of edible fruits cannot be essential to the production of seeds, for the vast majority of the seeds of plants are natural without such accompaniment. In fact, seeds borne within fleshy fruits must usually be separated from the pulpy mass, in order to insure their germination. They are usually destroyed if allowed to remain within this fermentable substance until decay takes place. It may have been supposed by some, that edible fruits were first produced directly for the good of man or the animals which fed upon them; but this explanation is no longer acceptable to modern thought. In nature, everything is thoroughly selfish. Plants have no interest in animals, save as the latter, can serve their own purposes. Animals have no benevolent tendencies toward plants, and never care at all for them, except as their own interests are subserved. Why, then, should wild fruits be developed? The fleshy part is not useful towards the perfection of the seeds, neither can it serve any other directly useful office for the plant. The facts in the case give us the best answer. When grapes or strawberries are swallowed by birds, the seeds pass the digestive processes unharmed, and are scattered far and wide over the face of the earth. The fruits of the Crab Apple and hawthorns are devoured by deer, cattle, &c., and the seeds, in a similar manner, are safely scattered over wide areas. Those of pumpkins and squashes, in their wild conditions, secured dissemination in the same manner. In accordance with this idea, we find that fruits only become edible when the seeds reach maturity. Before this time, they are not only uninviting, but are hidden among the foliage by taking its tint of green; but when the seeds mature, they color up so as to be conspicuous, soliciting attention. This method of securing the dissemination of the seeds, though resulting in the same thing, is by no means

uniform as to the part of the plant which thus becomes palatable to animals. In peaches, cherries, &c., it is the ovary itself. In apples, pears, &c., it is mainly the united leaves of the calyx, or outer part of the flower. In the strawberry, it is the tip of the stem (receptacle of the flower). In the cashew nut of the tropics, it is a part of the stem below that which produces the flower.

If these things are true, we can assert that the edible formation is the result of a process of natural selection favorable to the plant as a species, because it secures the perpetuation of the species through the broadcast sowing of seeds. We can also assert that man's selection, in a similar way, must be capable of securing special developments from plants with or without seed production. This last statement is very likely to be considered debatable. Can man gather now, or at any other time, grapes from thorns, and figs from thistles? We know that we do not, but we do not know that it is always to be impossible. These edible parts have been produced in nature in connection with the seeds, because, as we have said, the plants were thereby benefitted. But in the man's selection, this need not be the case. The adage, "What man has done, man may do," is serviceable here. The cabbage, the cauliflower, the Kohl rabi and Brussel's sprouts, are examples of what he has done, for all of these originated from the same weed-like plant, which still preserves its natural character on the sea coasts of Europe. There is no probability that anything valuable can be thus obtained from every plant, neither that any one thing can be secured from two or more sources, for all that can be done is to watch closely for any variation suggestive of utility, and then by repeated sowing and selecting, perfect the type. Who knows but that from a rose bud something as good as a fig can be obtained? Who knows what may be accomplished from many plants in this same direction by the future horticulturists? The process, if successful, will doubtless take long and patient watching and waiting, but the accomplishments of the past, both by nature and by art, are surely worthy of recognition and repetition. Our cultivated fruits are now widely different from their wild progenitors. There is no end to perfection. They are still susceptible to improvement.

Our second proposition may be quickly disposed of. It cannot be that any seed was directly and primarily made to be eaten. There is no possible good which could come to the fruiting plant to be robbed of its most precious treasures with no return. There is no possible return, if the seed is stolen and destroyed. There may be instances, it is true, in which the sacrifice of some seeds may be of advantage to others, as when a squirrel gathers nuts, and, after carrying them away, fails to eat them all; but this is a hazardous experiment, not likely to be of efficient service. In fact, the seeds which are now prized by man for

food have been greatly changed by him from the wild condition, in which the richly-stored, but small-sized, grains were clearly useful to the plant only for its perpetuation. We have said seeds were primarily for the purpose of reproduction by *generation* to distinguish this method from that by division, such as occurs in artificial cuttings, grafting, &c., and in nature, by runners, bulbs, &c. This peculiarity of reproduction by seeds, is of prime importance, but, probably, only because of the mode of their production from fertilized flowers, hence we shall turn to our first subject.

Many have supposed that the fundamental and most essential offices of seeds are to rapidly multiply the individuals of a species from generation to generation, and to preserve the latter during winter, or when the growing plant could not survive. These are, indeed, important services, but they are just as well performed in some cases by other means, with greater economy. Flowers are exhaustive growths. The bulblets of the Tiger Lily are, for these purposes, as good as seeds, and since no flowers are required, the method of production ought to be better for the plant, if, indeed, the seed is not otherwise useful. Top-onions afford another instance; the brittle branches of some willows give us another, not to speak of runners, stolons, bulbs, &c.—a long list of various forms.

But, since hundreds and thousands of plants are normally reproduced from seeds, notwithstanding the expense of the flowers, to one otherwise naturally multiplied, there must be some good reason for it, which we should be able to find. Can we do this?

The only marked difference in the production of a seed from that of a bulb, is in the fact that the former is a product of fertilization, while the latter is not. Can we find why this should make the seed specially valuable? The most striking fact in the organic world is the differentiation of individuals in regard to sex. This differentiation occurs in nearly all animals, and in many plants. But many other plants, and vastly the greater number, have the sexual separation only in the organs of the flower. If sex separation is the important thing its prevalence indicates, why should not most plants also have this distinction? By looking again, and gaining better knowledge of flowers, we do find an explanation of the apparent anomally. The fact is, flowers, though possessing both kinds of organs, are most wonderfully fitted for cross-fertilization, thus making the rule general. We must, therefore, amend the first sentence of this paper, if we would be critically exact! Flowers have for their primary office the production of seed *through cross-fertilization*.

Here, then, we arrive at the marked difference between the seed in general, and the sexual reproduction forms. With this explanation, our second proposition assumes a higher meaning,

and the whole phenomenon of seed formation is more satisfactorily explained. Reproduction of seeds is highly beneficial only because of the crossing of the flowers. Nature gives us, then, a very emphatic hint, which we will do well to heed still more fully than we now do. Practical experience has abundantly proved the value of artificial crossing of the pollen from one plant to the pistil of another of the same species, and it appears that the greater good comes from the greater dissimilarity of conditions under which the two parent forms have been grown.

The correctness of the conclusions here announced can hardly be disputed, for they are founded upon the broad and general facts of nature. That ready and abundant proof is not at hand in art, if, indeed, such a state of things exist, is only because the variations, good or bad, are usually of small, even minute, amount for any one generation. The practical horticulturist must not get discouraged through want of immediate and brilliant success in improving the object of his special care. Let him study well his subject, master fully the problems of plant life and well being, then "learn to labor and to wait."

THE RELATION OF BEES TO HORTICULTURE.

BY C. P. DADANT, HAMILTON.

Mr. President, Ladies and Gentlemen:

The relation of bees to horticulture can be divided into two main parts: the relation of bees to flowers, and their action upon fruit.

The sole natural food of the honey-bee is taken from the blossoms and is composed of *nectar only* for the adult bee, and of *nectar and pollen* for the growing larvae. If we believe that there is a purpose in everything in nature, we will soon find the purpose of bees and other insects. They are created undoubtedly, to help in fertilizing the flowers. The pollen, which is the fecundating dust of flowers, would not in all cases reach the germ if it was not for the busy insects, who, while in search of honey, shake a portion of this upon the pistil, carrying it also from one blossom to another. Pollen exists in such abundant quantities, and the amount of it needed to fertilize the blossoms is so small that there is always plenty, and the only requirement is that it be properly distributed. The incessant travels of the insects over the blossoms not only help the distribution, but also furnish to one blossom the pollen of another, thus preventing excess of consanguinity that would often prove fatal, and help to create new varieties.

A very clear evidence that the honey exists in the blossom to attract insects for blossom fertilization lies in the fact that those

flowers that yield no honey, and therefore are not visited by insects, have to produce enormous quantities of pollen to secure fruit fertilization. Among these we will cite corn and rag-weed. And these plants have to be congregated in large numbers in order to secure fertilization even then; for the winds may blow the pollen away from a single plant, so that it gets none of it. Many have probably noticed that a single corn stalk, in a field, will often prove barren after having bloomed profusely, owing to its pollen having been blown away, without reaching the female blossom.

It is not the bee alone who is needed for the fertilization of flowers, but other insects as well. For instance, red clover whose corolla is usually too deep for the bee, needs the agency of the bumble-bee, in order to become fertile. It is well-known to agriculturists that the first crop of red clover gives much less seed than the second crop, but they do not all know the reason of this is that the bumble-bees are more abundant in summer than in spring.

Do bees or insects in general ever damage blossoms by too frequent travels over them? No, indeed, for in this case they would long ago have destroyed white clover, smart weed and spanish needles which yield more honey than other blossoms and are therefore oftener visited by bees.

The relation of bees to fruits is a very much vexed question, owing to the fact that a great many horticulturists are prone to regard the bee as an enemy, without investigating the question thoroughly. During seasons of scarcity of blossoms, dry seasons especially, bees feed on the juices of different fruits, but always on damaged fruit. The nutriment that they get therefrom is always of very poor quality, as the juices of damaged fruits are generally more or less fermented already, when the bee appropriates them, except perhaps in cases where the fruits have just been punctured by birds. Fruit juice is also much inferior to the nectar of blossoms, and can never take the place of honey in bee-economy.

Can bees injure sound fruits? No, emphatically no. If they could tear the skin of our tenderest fruit they could readily open the still more tender corolla of the red clover, close to the sweet nectar and thus appropriate an endless supply of honey at a time when there is nothing else. The mandibles of the bee are not made to puncture anything, they are of a round shape, and entirely devoid of teeth. But facts are better than any theory. We own a vineyard of eleven acres in connection with our large apiaries, and have made a number of tests, among which was one public test before the teachers and pupils of the Hamilton school, and the result of all these tests has invariably been the same. The bees have failed to puncture any sound fruit. For the lover of bee-culture and horticulture combined, who wishes to investigate further, I will mention the Report of the Com-

missioner of Agriculture for 1885, page 336, in which experiments are related in regard to this question.

The relation of bee-culture to horticulture might also be mentioned in view of the comparison between the products of both industries. Honey is classed among fruit preserves, jellies, jams, etc., in the agricultural and horticultural fairs, and there is room for both the products of the bee-keeper and those of the fruit-grower, side by side. Honey does not interfere with fruits on the markets, nor does it help, to any great extent, at present, in the preparation of fruit preserves. The only purpose for which it has been used largely, in connection with the products of horticulture, is the manufacture of wine. In our large vineyards, before mentioned, we have found great profit in using honey for wine-making. Especially in wines that require sweetening is honey invaluable, its flavor being, in the opinion of many people, an adjunct which renders it superior to sugar for this purpose. We are not the originator of this method, for many old works favor the use of honey in wine-making and speak highly of wines thus made. The proof of the pudding is in the eating, and we should be very glad to see a number of our horticulturists try this and report after trial. Honey being now cheaper than sugar, its cost is not an objection, and wines thus made are more valuable, especially for medicinal purposes.

REPORT OF COMMITTEE ON FINAL RESOLUTIONS.

Resolved, That the Society tender its sincere thanks to the Reception Committee of the citizens of Hamilton for the hospitable manner in which they have received and cared for us during our stay here.

To the Warsaw and Montebello Floral Societies for the beautiful and artistic manner in which the hall was decorated. Also to Mrs. Dr. Lyon, for cut flowers and varieties of Chrysanthemums.

To the ladies and gentlemen for the most excellent vocal and instrumental music with which they have entertained us.

To the various railroads and hotels who have granted us reduced rates, to V. R. Faught, of Hamilton, for Rustic Work and Immortelles.

E. A. Riehl,
C. S. Rowley,
W. S. Dyer.
Committee.

REPORT ON FLORICULTURE.

BY MRS. R. T. CONABLE.

Mr. President, Ladies and Gentlemen:

It is an old and familiar saying, that distance lends enchantment; and I am thoroughly convinced that it is so, for when I was informed, some weeks ago, that I was to give a report on

Floriculture, it appeared an easy task, as well as a pleasureable one. But now, as the time draws near, I feel as if I could not give you anything that would be new or of interest to you. In looking over the Horticultural transactions of previous meetings, and being a constant attendant at this one, I find the ladies have so ably discussed the flower question, that I am almost afraid that what I may say will prove to be a repetition; if so, I beg pardon. Flowers are the tie that binds or unites the Horticultural and Floral Societies, for first we have the flowers and then the fruit. If we could have a theory that the perfume of the flowers was condensed into the flavor of the fruit, and could substantiate it, what a beautiful theory it would be, but it would soon be shattered by comparison, for if we compare the delicate blossom of the crab-apple, and the bitter-apple, or the delicious plum and its ill-scented blossom, we will find that changing the form materially alters the value; but this is a digression. Florists should class the season just passed, as being one of flowers, both of natural and artificial. The early spring favored the planting of seeds, slips and bedding plants, and with the warm sunshine all kinds of flowers begin to materialize on the ladies' hats and bonnets, and the frequent showers during the heated term caused all vegetation to make rapid growth. It was particularly noticeable in the Geraniums. The foliage was rank, the trusses being unusually long, and the flowers abundant, large and full. It has been my experience in the cultivation of flowers, that there is no plant more remunerative for blooms, or more easily tended than the Geranium commonly known as the Fish. Of these there is an endless variety of colors and shades, and, by proper management, they will bloom all year round. Then there is the Lantanna of different colors, always ready with a bloom, Summer or Winter. All that is required is a position where the sunlight will fall directly upon them, and sufficient moisture to keep the leaves from withering. For a delicate and fragrant button-hole boquet, I would like to suggest the light shaded Lantanna, with the dark and light, purple Heliotrope, with one or two Rose Geranium leaves. Try it and see if the effect is not beautiful. Appearance is one of the most essential considerations in regard to the desirableness of plants, and is a matter which we should not forget in our arrangement and care of window plants. Dust being one of these first and greatest enemies during the winter months, they should either be protected or given an occasional washing with milk-warm water. Also water the plants freely; do not allow the soil to become dry and hard, stir it up every now and then, so it will not become baked, as it will from repeated waterings. To have many flowers you must have many shoots to your plants, and by pruning often, always from the top, you increase the lower growth and have a well rounded bush, more flowers, and the blooms will be larger

and richer looking. In observing these precautions you will be doubly repaid for the time spent in caring for them. Not alone in the pleasure that is derived, but the important sanitary value of flowers and plants, makes them a feature of floriculture which calls for special attention. One of the most important of late discoveries in chemistry is that made by Prof. Wontogazza of Pavia, to the effect that ozone is generated in immense quantities by all plants and flowers possessing green leaves and aromatic odors, such as Hyacinths, Mignonnette, Heliotrope, Narcissus, and the Cherry-laurel. Many others, equally fragrant, throw off ozone largely on exposure to the sun's rays; thereby making them powerful disinfectants and deodorizers. It is the belief of chemists that whole districts can be redeemed from the deadly malaria which infests them by simply covering them with aromatic vegetation. The bearing of this upon floriculture in cities is very important. Experiments have proved that the air of a city contains less ozone than the surrounding country. Plants and flowers and green trees, then, are a necessity. Let this be a plea for the little flower pot, or tin can, whichever it may be, if there is any one here who objects to them as always being in the way.

"And now the summer days are dead,
And we have ice, frost and snow
To hide the Sun and cover the Earth,
And cold, fierce winds blow."

And as old Boreas will be King for the next few months, we will have the entire care of the delicate plants, for which we prepared in the early fall, by shifting into new pots of soil, and arranging for light and warmth to keep Jack Frost's icy fingers from among the flowers, but if, like a thief in the night, he should chance to slip in and touch the treasured ones, the thawing out should be gradual; first sprinkle the foliage with cold water, and as the temperature rises do not let the ascendency be too fast, and for several hours not be allowed to rise above an ordinary heat. Permit the sun's rays to strike upon them with gradual increasing heat, and it will aid their recovery in a great measure. Avoid handling the frozen plant, as the injury will be much greater if the leaves become bent or broken. After a few days cut back the frozen parts, to the harder wood, just beyond the leaf bud, not allowing the sap to oze from the lacerated parts but immediately touch with some of the soil. The plant will soon begin new growth, and will be doubly dear on account of the sad experience. Another important thing is the pulling

of the flowers, for this is the case in which "the more you give, the more you will receive, and be doubly blessed for a single flower."

"In all places, then, and in all seasons,
Flowers expand their light, and soul-like wings;
Teaching us by most persuasive reasons,—
How a-kin they are to human things,
And with child-like credulous affection
We behold their tender buds expand,
Emblems of our own great resurrection,
Emblems of the bright and better land.

DISCUSSION.

Mrs. Clapp—My experience in keeping flowers from freezing, is to wrap them up, not closely, but with a light cover. I have been very successful.

Mrs. Gray—I have been very unsuccessful this year with my flowers. They were all frosted this fall with the first frost, so that I have nothing to say.

Mrs. Lamonte—My flowers are not quite so full of bloom as usual this year, but they have done fairly well. Early in the spring I put all my house-flowers out in the garden. I did not care to keep them in the yard as the sheep and geese sometimes get in the yard. My flowers were a success in the garden. I gathered a great many blossoms during the season.

President Dunlap—To what do you attribute the bloom; was it the extra cultivation, or the absence of sod?

Mrs. Lamonte—The garden was rich, but I used only common garden soil, no fertilizers. I worked them well and it was just giving the roots plenty of room, and the season being moist enough to make them grow nicely.

President Dunlap—My wife has gone home, so I will venture to say a word about flowers. I think they will do better if they are in large beds than in small beds with blue grass sod around. I think the sod absorbs the moisture and thus they can't do so well.

Mr. Thomas—Outside of roses, my experience with flowers is very limited. I believe in very vigorous pruning to get fine roses. In order to prune properly, you must be a judge of the

plant and what the plant will be able to carry successfully. I take out all the old wood, of course, and quite a number of the young shoots; do not leave too many of the living shoots.

Mr. Brown—I don't see why we don't have more roses. I cut them right back to the ground and manure them well. I sold a man a Jacquimenot last spring and it did so well that he says now that he would not take $20 for the bush. I do the pruning about this time of the year and then cover them with manure. I think Mrs. Lamonte's idea of having them in the garden is a good one; if they are where you can plow them it will be all the better. The roses are the next best thing to the verbena. I cut the verbenas back also. This season I had bloom on my verbenas to the middle of November by covering them of nights.

Mr. Cook—I pride myself on my roses, and at the time of our Rose and Strawberry Show at Lacon last June, I think I had an exhibition as fine as could be found in the United States. I had a case as wide as this room and twice the length of the room. It was an extra season for roses with us. Some were counting the roses on one bush to get an estimate of the number and they calculated that on one hedge were over 10,000 blooms. One trouble with our growing roses is that too many do not know how to treat them. Now I take the Calla Lily and put it right out in the ground with the cabbage, and re-pot it in the fall; that will make it grow. With my roses I believe in fall trimming. I shall go through them when I get home. The sap had not gone down enough when I came away to put them in shape for trimming. My June roses, I shall cut out about one-third of this year's growth; my hybrid perpetuals, I shall cut back about two-thirds. For some winters I have not protected my roses at all. I lose more by drouth than from cold. I prefer to go to the henery for fertilizers. I take it through the summer and sift it, and when I want it it is in good shape. I put it around the bushes and then cover with straw or other litter, or anything that can be spaded in. I cultivate around the roses the same as I would around the cabbage. If you are buying flower seeds, do not buy the cheap, mixed packages. Buy good high priced seeds if you want anything satisfactory.

Mr. Brown—How far apart do you put your roses in the hedge?

Mr. Cook—I have been putting them about three feet, but after this I shall put them four feet. Too close, they shade one another too much.

President Dunlap—What do you do with the rose slug?

Mr. Cook—I do not pay any attention to that until the buds fall, and then when I see any indications of slug, I take a spoonful of white hellebore and put it in a bucket of water and sprinkle the bushes with it. The slug has been very bad this year; last year there were not a half dozen bushes affected with it. It takes a year or two to get rid of it.

Mr. Gaston—Our Central Horticultural Society meets at Lacon next summer, and we invite all the ladies of the Mississippi Valley to come over there and see Mr. Cook's roses.

Mrs. Lyons— I have had little trouble with my flowers; never have them frosted. I keep a great many in pots, and bury them in pots.

Mr. Riehl—I find that as to the rose slug, Paris Green will dispose of it. One other point is the matter of water. It is often thought necessary to water them. As it is usually done it is worse than useless. If done at all, it should be done thoroughly. Ten times the water that is usually applied is what should be applied. This summer I struck a plan that was a success. We had a lot of asters suffering for water, and I took a light drill and punched the bed full of holes six or eight inches apart, and that let the water down about a foot, and the ground showed moisture on the top for several days, and the plants did not need more water for a week.

Mr. Cook—As to watering roses, you want to wait until the ground is real dry, and then drench it. Ladies often water their flowers every day, and the consequence is that their flowers do not develop. The fault is in too frequent watering. My objection to the Paris Green and London Purple is that they discolor the roses. The preparation I use does not hurt them.

Mr. Shank—I think an emulsion of kerosene and milk is better on roses than any poison. It has no effect on the pollen, but is death to the slug. Simply take about half a pint of coal oil in a gallon of milk and put it in a pail of water, and apply

it with a sprinkler. It has been suggested by some parties that they have had no trouble about roses freezing, but we have trouble in that respect and we are further south too. The trouble may be from our freezing and thrawing. We cover them. I dig on the side I want to lay the rose, being careful not to cut any main roots. I dig at an angle so that I can bring the bushes over easily. Then with a pair of heavy gloves on I can pull the bush over, and throw on a shovel of earth and cover it.

Mr. McKinney—Be careful in using the kerosene. I have tried it, and tried it weak, and spoiled the roses. It is oily, and oil of any kind injures them. In regard to varieties, I do not want this discussion to go over without mention of the Cocodia; I have a stand of it and it kept blooming all winter, and it is very beautiful. I had by the side of it a Pearl of the Garden. If you want blossoms all the time, you must buy Tea Roses, putting them out in the spring and they will give you roses all the time; put them away in the cellar for winter.

Mr. McCleur—The gentleman spoke about kerosene emulsion, but with his method of putting it on he is likely to injure his plants. In using kerosene it must be so thoroughly mixed that it will not float on the surface. By simply pouring the milk and kerosene together, the kerosene will float and injure the leaves. They can be mixed but it takes time to do that.

Mr. McKinney—A half-pint of coal oil to one gallon of milk. You can thoroughly mix them by agitation, and then pour it instantly into about three gallons of water and put it on with a fine rose sprinkler. I do not suppose, however, that you will just stand there and keep pouring it on. I do not believe that any spraying is necessary more than just a fine mist.

REPORT OF COMMITTEE ON DELAYED EXHIBIT.

Your special Committee on Delayed Fruits would report as follows: Jacob Auer, of Deer Plain, Calhoun Co., exhibited fourteen plates of apples composing twelve entries, which we find to be fine specimens, of uniform shape and very free from imperfections, although showing somewhat the effects of the delay in transportation. From a necessarily brief inspection of the fruit with which they would have come in competition, if received in time, we think they would have received a fair share of the

premiums. And in view of the fact that the delay was probably no fault of the exhibitor, would recommend the award of first premium on article 66, class 3, Smith's Cider, on which, there was no competition, and a special premium of $3 on the exhibit.

We also find samples of Leeper's Beauty, sent by Y. Byrd Leeper, of Paducah, Ky., which are fine looking, showey specimens and remarkably smooth, but we would judge lacking in quality; and in absence of further knowledge, make no recommendation.

Respectfully submitted
L. R. Bryant, *Committee.*

Mr. Bryant—I have an important matter to bring to your consideration, but it is in the shape of a resolution:

Resolved, That the thanks of the members of this Society be and hereby are tendered to our retiring President for the able and courteous manner in which he has performed his duties.

Mr. Dennis puts the question: Carried.

President Dunlap—I thank you for this mark of your esteem. I am sure I have never presided over a meeting where I did it with more pleasure than I have in this. It has been no effort on the part of the Chair to conduct these meetings. It reflects great credit on everyone here for the manner in which you have aided me in the performance of these duties.

Moved that all unread papers be referred to the Secretary with power to dispose of them as he sees fit. Carried.

Adjourned.

DEFERRED PAPERS.

PART of these papers were not read for want of time; others did not come into the hands of the Secretary in time to appear in their proper places:

A COLD WAVE ILLUSTRATED; OR, HOW A BLIZZARD GETS AMONG US.

BY W. H. RAGAN, INDIANA.

It is a wise design of nature that provides for the constant changing and shifting of our atmosphere, without which stagnation and death would result. There are three principal causes which operate to produce atmospherical disturbances—the rotary motion of the earth on its axis, the daily fluctuations of temperature due to the sun's heat, and the varying density, or weight of the earth's atmosphere. The first is constant, and, without the co-operation of one or both of the others, could only produce a regular shifting of the atmosphere with reference to the earth's surface, and that without violence. The second would produce local currents from the land to the sea, or from elevated to low lands, or the reverse, as the alternate conditions of heat and cold would succeed each other, by day or by night.

The third is, therefore, the great disturbing cause—the unequal weight or the atmosphere in adjacent regions for all important movements of the atmosphere result from differences of pressure. The direction of such movements is from the areas of high towards the areas of low pressure. If it were not for these causes, atmospheric disturbances would be unknown, and the climate of a given place would be almost entirely determined by its altitude and its latitude.

An area of low pressure, or technically a cyclone, is a mass of air, of hundreds or thousands of miles in diameter, which has a great motion from the right to the left, and towards a common center or point of minimum pressure. It also generally has a progressive motion, and brings to the places over which it passes, clouds, precipitation, changes of temperature, and sometimes violent atmospheric disturbances. This great cyclone, or meteor, with its rushing currents, sweeps over the country for miles,

gathering the warm, humid surface atmosphere, and carrying it to a common center, where it is thrown upward and outward, where the cooling process condenses the accompanying moisture, which is in turn precipitated to the earth, in the form of rain, hail, or snow.

Conflicting currents of different temperature, usually on the southeast margin of this great swirling mass of low pressure atmosphere, and perhaps hundreds of miles distant from its center, generates the destructive tornado, which we so often hear improperly called a cyclone. A tornado is impossible, except as the accompaniment or picket-guard of a cyclone.

It will be seen by what has been said, that a cyclone, or area of low barometer, must necessarily be followed and displaced by an anti-cyclone, or high barometer, as the latter constantly rushes towards the former, in the effort of nature to re-establish an equilibrium of atmospheric forces. There, is, therefore, a constant succession of atmospheric changes taking place, though these changes are by no means of equal degrees of energy. Fortunately, the extremes are but seldom reached: extremes which would result in violent and destructive storms and tornadoes.

I have already said that these varying conditions were wisely conceived by the Creator, for the purpose of purifying and ventilating the atmosphere. For our present purpose, this may be as far as we need inquire into the causes that generate, or give rise to, a low barometer or cyclone.

THE BLIZZARD OF JANUARY 6-10th, 1886.

Having said this much, by way of introductory, and for the purpose of giving a clearer understanding of the subject in hand, I will now illustrate my theory of storm movements, especially of that class of storms for the designation of which we have but recently coined the fitting term "blizzard." For this purpose, I have chosen the severe and somewhat peculiar cold wave of January 6-10th, 1886.

In reference to this noted storm, the Director of the Indiana Weather Service, in his reports for the month of January of that year, has the following: "The cold wave of the 9-13th, in some particulars, was the most remarkable known for years. This was true as regards its wide-spread distribution in the southern portion of the United States. The weather records of Florida show that they have had no such unusually low temperature since 1835. The zero line dropped down into Texas, and extended far into the Gulf of Mexico, including all of Florida. The wave passed down from Manitoba over the western plains to Texas and Louisiana, gradually diminishing in severity as it spread eastward. It did not strike us (in Indiana) with the violence of that of Jan. 1st, 1864, nor did the temperature fall so low as on Jan. 5th, 1884; but like each of those

noted storms was borne to us by west or southwest winds. This storm is, therefore, noted, not so much for its intense severity in Indiana as for its having penetrated the extreme south as it did."

The atmospheric conditions that precede a blizzard—indeed constitute the preliminary features of it—are a low barometer, centered well south and moving northeasternly. As a rule, we have from six to ten low pressure movements during a month. Almost without exception these pass out of the territory of the United States through the lower St. Lawrence valley. Just why this is so need not now be considered. Usually these centers of low pressure arise in the Rocky Mountain regions of the United States, or enter our territory from Manitoba, and, passing through or near the great lakes, follow the St. Lawrence to the northeast. Conditions of this kind may bring us, in the Central Mississippi Valley, thunder storms, heavy rains or snow, wind, and even tornadoes, but will not give us a genuine blizzard in all its fury with a resultant temperature of from ten to thirty degrees below zero. If, however, an area of low barometer enters the territory of the United States from Mexico or the Gulf of Mexico and passes northeasterly toward the mouth of the St. Lawrence, and if this be during the winter months, we may have a severe cold wave extending far into the south and borne to us in the latitude of Indiana and southeasterly, by winds from the west or even the southwest.

In some particulars, the storm under consideration excelled any on record. This is especially true in regard to its extent and unusual severity in the extreme south. When we refer to the record of the Signal Service we ascertain the causes of the unusual distribution of cold. As stated above, certain barometric conditions are the prelude to such storms.

In this case (and this is but the type of all such storms) a low barometer of unusual energy came within the range of observation near Las Animas, Cal., at 3 o'clock, P. M., Washington, time, on Jan. 6, 1886, from which place it moved southward into the Gulf of Mexico, where it was central at 3 o'clock, P. M., of the 7th. From there it was deflected to the left, being noted eight hours later over the mouth of the Mississippi river, and thence passing northeasterly, following the Gulf and the Atlantic coasts, it reached the mouth of the St. Lawrence at 7 A. M. of the 10th.

An area of low barometer may be illustrated by, if not compared to, a vigorous blaze, as a burning building, which creates a rarified condition of the air and a consequent rush of surrounding atmosphere to fill the void. In the northwestern portion of our continent, in the elevated regions of the Rocky Mountain chain, we have a comparatively constant high barometer. When a low starts up, a corresponding high, from this region of constant high, flows in to fill the vacuum.

Farther north, in the artic region, may be found, as a constant or passive element, a low temperature. Without a disturbing cause, this low temperature will hover about its proper latitude. When, however, a low barometer, which is always accompanied by high temperature, arises, a high barometer moves into its wake, thus inducing currents of cold air from the arctic region, with a resultant lower temperature. If this low barometer passes through the central or northern portions of the United States, it is easy to understand why it would not draw a volume of cold air into the southern portion of the country. But when the reverse is the case and the low barometer passes well to the southward, as was true of the storm under consideration, and especially if the low has unusual energy, we may, certainly, expect the whole country to be overspread by a sheet of cold.

There are natural causes which direct and control the movements of such storms, when once inaugurated. If not, their movements would be direct, and they would sweep down upon us of the Central Mississippi Valley from the north rather than from the west or southwest. Hudson Bay and the Lakes, to the north of us, with their stores of summer heat, ward off these storms, pushing them, as it were, to the westward and against the Rockies, where they follow in the lee of the mountains, which turn upward and beyond the reach of interference the warm currents from the Pacific, and, facilitated in their movements by the great treeless plains, they reach the track of preceding low barometer. As the low almost invariably move to the northeast, the high, with its cold, naturally follows. Thus we have the phenomenon of cold weather coming to us from the west or northwest.

ILLUSTRATING THE STORM.

I will now hurriedly illustrate, by the use of a set of tri-daily Signal Service Charts, the movements of the storm under consideration. As already stated, this ink-spot on the chart in eastern Colorado marks the center of the low barometer, at 3 P. M., of Jan. 6th. The dark wavy line across the upper portion of the chart indicates the line of zero temperature at that hour. The almost unchanged position of the zero line in the lake region during the prevalence of this storm, will illustrate the beneficial influence they (the lakes) exert upon the climate, a fact which gives to Michigan and the surrounding territory its just renown as a superior fruit-growing section. Turning to our next chart, which represents a period eight hours later, we find that the center of the low barometer is now near Fort Sill in the Indian Territory, and that the zero line has dropped down from Fort Custer to Denver, while all the Gulf region is basking in a temperature much above the frost point.

The next chart, which is for 7 a. m., of the 7th, represents, as you will see, the center of the low barometer as near Indianola, Texas, and the zero line at Sante Fe and Fort Elliott, but almost unchanged as to the Lake Region. The temperature of the Gulf Coast is forty degrees and upwards.

This chart, which is for 3 p. m., shows the low center to be in the Gulf of Mexico, immediately south of Indianola, and off the north of the Rio Grande. The zero line has also dropped down, and that too against the modifying influence of the afternoon sun, from Fort Elliott to Fort Sill, while the temperature of the Coast responding to the combined influence of the sun and the presence of the low barometer, which you have already learned invariably brings higher temperature; has risen to sixty and seventy degrees. The orange orchardists of Florida were yet unconscious, unless warned through the Signal Service, of their impending doom.

At 11 p. m. we find the low area covering the mouth of the Mississippi. The zero line has spread eastward to Fort Smith, Arkansas, from which point it extends almost due northward to St. Paul and the St. Louis rivers, where it turns eastward through Lake Superior, into Ontario. The temperature has fallen in Texas to thirty degrees at Indianola and Galveston, but is still sixty degrees in Florida.

The chart for the morning of the 8th represents the low central at Montgomery, Alabama, and the zero line extending from the Rio Grande below El Paso, Texas, by way of Palestine, Little Rock, Keokuk and Lake Superior. Temperature of Floria from fifty to seventy degrees, while all of Texas is below twenty degrees. Texans will remember this as their coldest morning.

Eight hours later, (the heat of the day), the low is in eastern Georgia, while zero has extended eastward to the Mississippi river, but is receding in western Texas. The orange orchards are still unharmed in Florida, but are suffering in Louisiana.

At 11 p. m. the low has reached the mouth of Chesapeake Bay, and the zero line now takes in Memphis and northern Mississippi. The Gulf Coast from Pensacola westward has a temperature of twenty degrees and lower, but in east and south Florida it is still above fifty degrees.

The morning chart, 7 a. m., of the 9th, shows the low center on the New Jersey coast, and zero extending from Santa Fe via Denison, Vicksburg, Chattanooga, and thence northward to Cincinnati, Chicago and Lake Superior. Jacksonville and Cedar Keys have a temperature of thirty degrees, while Sanford and Punta Rassa have forty and fifty degrees respectively. At this observation we note the greatest barometrical gradient that occurred during the storm, the readings being 28.8 inches at the center of the low, in New Jersey, while on the northern border

of Minnesota it was 30.8 inches. The disparity of readings was unusual, which gave the storm its peculiar force.

The 3 p. m. chart represents the low as central on the coast of New Hampshire, with the zero line comparatively unchanged.

The night observation of the 9th shows the low area in Central Maine, with zero extending still more to the eastward. The temperature is rising rapidly in Southern Texas and the southwest, but still falling in Florida, having now reached thirty degrees in the central portion of the peninsula.

Our next chart represents the storm at its maximum. This is the morning of the 10th. The low barometer has now reached the mouth of the St. Lawrence, and the zero line extends from Utah, through New Mexico, Texas, Arkansas, Mississippi, Alabama, Georgia, North Carolina and Virginia, and the line of thirty degrees across Florida as far south as Punta Rassa.

Our last chart is a review of the movement of the low barometer during the storm. The series of ink-spots beginning in Colorado, and ending near the mouth of the St. Lawrence river, represents the center of the low at the tri-daily observations, from the origin of the storm to its close. It will be remembered that we are considering the movements of a storm of unusual character. Most storms pass more directly across our territory, the terminals generally being the eastern slope of the Rocky Mountains and the Gulf of St. Lawrence. Signal Service predictions are based on this general rule. Again, the estimated velocity of movement is based on the knowledge of the average hourly progress of such storms. The high per cent. of correct predictions (about eight-five) inspires us with confidence and we have learned to consult the daily weather predictions with some expectations of their subsequent verification. When one fails, however, we are inclined to criticize meteorological science and to insist that, after all, it is mere guess work. But the fair minded and intelligent observer must realize, from what has been said, how utterly impossible it would be to correctly anticipate the direction and force of a storm of the character of the one we are considering, where there is such a wide departure from the uniform rule. When the telegraph and Signal Service shall have extended their dominion over British America and Mexico, we shall know more of the laws of storms affecting our continent. Then we shall be more surely warned as to their character and the probable time of their arrival amongst us, but, certain facts concerning them will, doubtless forever, remain beyond the ken of human knowledge.

As already stated, this storm was very disastrous in its effects in the extreme south. Florida orange orchardists suffered immense loss, while the whole of the Gulf coast experienced a cooling off almost or quite unparalleled in the memories of the present generation. While this is true as regards the character

of this storm in the south, many have occurred of greater violence in the north. Indeed, only two weeks later we were warned to "hoist the cold wave flag" and notified that at St. Paul they were having several degrees lower temperature than they had during the time of the storm under consideration, but we (in Indiana) did not realize its increased severity, while in Florida they were scarcely disturbed, the temperature there changing but slightly from the normal. On consulting the Signal Service records for this second storm we discover that the low barometer, the disturbing cause, originated very near the location of the preceding storm, viz., in Colorado, but instead of the very unusual route taken by the first it followed the more general course, in an almost direct line towards the Gulf of St. Lawrence, hence the succeeding high barometer and cold wave were only invited as far south as the track of the preceding low.

In the present state of meteorological knowledge, there exists no known preventive against the sweeping disaster of such storms as this. A single one may, however, suggest itself to the thoughtful. Extensive tree-planting on the great plains of the west will certainly have a salutary influence in modifying and retarding the free and unbroken sweep of these disastrous storms. Perhaps the people of no portion of the United States are more deeply interested in the remedy than the people of these great plains themselves. The simple thought of a so-called "norther" is a terror to the inhabitants of the Llano Estacado. Let them hasten the day when the dry and leafless Yucca stalk shall give place to the comforting forest of living trees. Then horticulture will, indeed, have contributed its share towards "tempering the winds to the shorn lambs" of our whole country.

A PEN SKETCH OF PROF. S. A. FORBES—FOURTH STATE ENTOMOLOGIST.

BY DR. F. W. GODING, RUTLAND.

The special qualifications of our several State Entomolgists have been varied. There is no doubt that Walsh, the friend of Darwin, was the most scholarly, and perhaps the nearest a philosopher, at the same time ranking high as an entomologist. LeBaron, the friend of Harris, possessing considerable literary training and a peculiar mental aptitude for the work, if not wholly original, was of such a character as to place him among our best independent and closely observing naturalists. Thomas, with his vast fund of entomological learning, will stand among our eminent entomologists rather as a judicious compiler and wise teacher, though we cannot forget his fine original work among the Orthoptera and Hemiptera. Prof. Forbes, our present State Entomologist, has qualifications different from any of

PROF. S. A. FORBES

FOURTH STATE ENTOMOLOGIST OF ILLINOIS

his predecessors in office. With but limited opportunities for acquiring a classical training, he obtained, by individual effort, its equivalent—a thorough, practical understanding of the principles of scientific knowledge. His labors, it may be said, are wholly original, carrying him and his students along strange pathways, many times treading byways almost unknown to other scientists, yet ever keeping in view the advancement of the interest of his fellow man. While our other official entomologists were known as entomologists only, Prof. Forbes is known and recognized as one of our most eminent scientists in the broadest sense—a master investigator, a matured philosopher.

Stephen Alfred Forbes was born in the year 1844, in Stephenson County, Illinois. In early life he attended the district school of the neighborhood until he was fourteen, when he entered the preparatory department of Beloit College. Ill health compelled him, after a year's study, to return to his home, where he continued his studies under the tuition of an elder brother, Col. Forbes, now of Princeton. When but seventeen he enlisted as a private in the 7th Illinois Cavalry, being regularly appointed to the rank of captain before he was twenty-one, and placed in command of a company. In 1862, while acting as orderly for Gen. Rosecrans, he was captured by the rebels, and spent four and a half months in the prison pens of Macon, Mobile and Richmond, saving himself from utter despair and consequent mental and physical wreck by the persistant study of a Greek grammar, a copy of which he had by some means obtained. After being exchanged he returned to his regiment, and remained in the service until the close of the war, being mustered out at Nashville, Tennessee. He was engaged in the battles of New Madrid, Corinth, Port Hudson, Franklin and Nashville, besides many small skirmishes, and accompanied Gen. Grierson in his memorable raid through Mississippi.

At the close of the war Capt. Forbes returned to his home, where he began the study of medicine, spending a year at Rush Medical College, Chicago, and two years under a preceptor, studying and practicing. Dr. Forbes now laid aside his military aspirations forever, and from thenceforth he has been identified with the cause of education. While reading medicine his attention was attracted toward botany, and he became so intensely interested in the study of nature that he determined to devote himself to scientific pursuits. That his choice was a wise one all will admit who are acquainted with the recent history of scientific progress. Dr. George Vasey was at that time in charge of the museum at Normal, and had a growing reputation as a botanist. To him the young aspirant for scientific knowledge appealed for aid and advice, as did he to many other eminent batanists through the medium of a correspondence. Dr. Vasey recognized the powers as yet undeveloped in the young man, and

rendered every assistance in his power, ever remaining a warm friend. When the doctor was called to Washington as Botanist to the Department of Agriculture, in 1873, Prof. Forbes succeeded him, increasing largely the collections, especially in zoology and cryptogamic botany, at the same time organizing the School and College Association of Natural History for the collection and exchange through the museum of natural history material.

He also organized the Summer Schools of Science at Bloomington, having the assistance of such scholars as Dr. Burt G. Wilder, and Profs. Barnard and Burrill, each of whom taught the specialties in which he had become eminent, Prof. Forbes teaching zoology. These schools eventually created the State Natural History Society which has occupied such an eminent place among gatherings of its class, the success of which is wholly due to Prof. Forbes' unremitting and self-sacrificing labors.

When the State Museum at Springfield was projected, Prof. Forbes assisted in its establishment and organization, furnishing all the specimens in zoology and botany. About this time he effected a complete re-organization of the museum at Normal, converting it into a Laboratory of Natural History, under the supervision of the State Board of Education, he receiving the appointment of Director. Having received the necessary appropriations from the State Legislature, he began a systematic zoological survey of the State, publishing the results in the Bulletins of the Laboratory, of which two volumes are complete, the third in course of publication. These Bulletins contain lists of plants, insects, birds, reptiles, batrachians, fishes, etc., and many exhaustive papers on the food of birds, fishes and insects, showing their inter-relations, and being the first effort to obtain an exact knowledge of such food habits, one thus being able to differentiate between noxious and beneficial species. Prof. Forbes is also preparing for publication a series of illustrated reports on the botany and zoology of the State which, when completed, will be an elaborate treatise on the natural history of Illinois. The first of these volumes, on the birds of the State, is now ready for distribution, and the manuscript of the second is more than half ready for the press.

In July, 1882, Prof. Forbes was appointed State Entomologist by Gov. Cullom, and continues to perform the duties of that office in connection with those of Director of the Laboratory. "In this position he has gained the confidence of the agricultural interests by the skill with which he has managed the economic problems that present themselves in the conflict between the vegetable and animal worlds." As State Entomologist he has published five reports and one volume of "Miscellaneous Essays," all of which have appeared in the transactions of the State Board of Agriculture.

Probably one of the most startling, at the same time, the most valuable contribution to our knowledge of insect life, which has appeared in entomological literature, is his elaborate article on contagious diseases of insects, which shows that a disease, in many respects similar to cholera, is very destructive to our greatest corn pest--the chinch bug—and may be communicated to perfectly healthy individuals destroying large numbers of them. Experiments have proven that such a warfare is feasible, and no doubt great benefit will follow its general application. In this discovery alone Prof. Forbes has been instrumental in rendering to the agricultural world more benefit than the combined efforts of all other entomologists; for here he will be using the most deadly weapon, and a natural one, that is possible to bring against animated nature. The Reports of Prof. Forbes are peculiar in that they embody, as a rule, original work only. Thus he has added directly to our knowledge of the life histories of, and remedies for, the corn-root worm, chinch bug, strawberry insects, of which he has published the most elaborate treatise extant, cabbage worm, wheat and corn insects, together with hundreds of others. But to obtain an adequate idea of the value of his discoveries one must read his published reports and papers—the latter of which have appeared in the various scientific and agricultural periodicals and publications.

Having been called to the chair of Entomology and Zoology, in the Illinois State University, January 1st, 1885, Prof. Forbes removed the State Laboratory to Champaign, where it is now located. There he has organized and built up a zoological department in the University, equipped an elegant biological laboratory, and collected the best working library of natural history this side of the Alleghanies.

The Professor was married in 1873 to Miss Clara S. Gaston, of Normal, and has five children.

Prof. Forbes' labors have been recognized in many ways by institutions of learning, and scientific societies. He received the degree of Ph. D., from Indiana State University in 1884. In 1887 he received the first class medal of one of the leading scientific societies of France for his publication on the food of birds, fishes, and insects. He is a member and secretaty of the State Natural History Society, Fellow of the A. A. A. S., active member and ex-president of the Cambridge Entomologist Club, American Ornithological Union, corresponding member of the Chicago Academy of Science, Davenport Academy of Science, active member of the State Microscopical Society and Fellow of the Royal Microscopical Society. He is original member and ex-president of the Western Society of Naturalists, vice-president of the Association of Official Entomologists, and honorary member of many Horticultural Societies, etc., etc. Prof. Forbes' field of labor is continually enlarging so that now

his studies cover the entire subject of the zoology of Illinios. In his work he is ably assisted by young men who are budding into scientific prominence. Profs. H. Garman, C. M. Weed, John Marten and C. M. Hunt have already shown their ability to second the efforts of their wise chief. With what has been done, and what is now being done by our corps of scientific workers, we cannot help but feel that Illinois stands at the head as a promoter of scientific investigation and education.

DEATH OF J. AMBROSE WIGHT.

BY THOMAS GREGG, HAMILTON.

Mr. President: There died recently in another State, a gentleman who, perhaps, never in his lifetime was a member of this Society, yet who, in the earlier years of our State, contributed greatly by his energy, his influence and his pen, to its horticultural development.

The name of J. Ambrose Wight is familiar to all the elder horticulturists of the State and the Great Northwest, as one of the originators and first editors of that sterling pioneer among the rural papers, the *Prairie Farmer*. He and his co-laborer, John S. Wright, about half a century ago, began to issue that sheet, at a time when the farming interests of these rich prairies were in their infancy,—and even when the point at which they lived was but a village; and Mr. Wight lived to see the former assume gigantic proportions, and the latter to become a vast city. He was never, as I have said, identified with or enrolled as a member of this Society, as he left the State before it had an existence, for another field of labor. But for many years in the past, when the fathers of many now present were active workers on the stage, his influence was at work plodding, hewing, leading and developing in the vast field, which has produced such immense results. His labors were co-equal, if not anterior, to those of the Bryants, and Whitney, and LeBaron, and Dunlap, and Hull, and Flagg, and many others, who, like him, have been called to their reward, and whose names have graced our annals and been preserved in our memorials. Through *their* labors—through *his* labors—as contributors, and as editor to give them place, this Great Northwest has been largely developed, and brought from its rude state to the position of a mighty empire. How many orchards, let us imagine, have been planted and cared for—how many evergreens made to bless our prairie homes with their living green—how many flowers caused to blush around us,—under the devoted energy and influence of this noble man, just now gone to his reward, and the co-laborers to whom we have alluded. To his and their influence, it is no detriment to say, we of to-day owe much of our knowledge of the "Art that

does mend Nature." We give due reverence to them; we mourned their loss as they were called one by one away. They all deserved honored places in our memorials. Let not the name of J. Ambrose Wight be forgotten because he made his later home in another State. His works yet live, his influence is yet seen and felt all over this great land.

EDUCATION IN FLOWERS.

BY MISS BLANCH GRIFFIN, CARTHAGE.

Mr. President, Ladies and Gentlemen:

Education is, properly, *to draw forth*, and implies not so much the communication of knowledge as the discipline of the intellect, the establishment of the principles and regulations of the heart. In the study of flowers, we draw near to nature's heart, and are drawn from out ourselves.

To him who, loving nature, walks forth and communes with her, she speaks or teaches a various language. What is the language nature teaches to us—to you; to me; to the child just learning to notice the lines and varied hues of the flowers spread so beautifully around us?

In this utilitarian age, we are wont to be greeted by the question, "What benefit to be derived therefrom?" Not less are we greeted by this question when we speak of floriculture than any thing else. There is much benefit in it. There is health, health physically, mentally and morally. Physicians prescribe it to recuperate the body; scholars recommend it to invigorate the mind; and *all* are drawn nearer the great source of *all* good as they come into sympathy and daily contact with his immediate handiwork. What is physical health but a normal education of the physical being? What is mental health but a proper discipline of the mind? or moral health but a proper establishment of correct principles?

So if, in the study or care of flowers, the body, mind and heart are uplifted, and made nearer the perfect being we would wish to be, it has seemed to me, there is much of education in flowers. Flowers, or floral culture, mark the difference between civilization and refinement; between barbarism and brutality. The higher the civilization, and the greater the attainments in culture and refinement, the greater is the appreciation of flowers.

To prove there is physical health, and consequently physical education, in plant study, turn with me, if you please, for a short time, the pages of history. As the tourist, visiting the Eiffel Tower, may behold the surrounding country spread out as a map before him, and may note the peculiar elevations and depressions

of country, so *we*, from the eminence of our position in the nineteenth century, may behold the peculiarities of the nations of antiquity.

Plants are known to have been cultivated from the most remote historic ages. Probably, in the earliest ages plants useful for food *alone* were cultivated. The cultivation of flowers, although less ancient than that of some of the plants most necessary for the supply of urgent wants, nevertheless dates from a remote antiquity, and has always existed in every country entitled, in any measure, to the credit of civilization.

It is a well-established fact that only after the selection and cultivation of those plants which yield man an abundant supply of food, that population augments and civilization takes its rise.

Egypt, once mistress of the world, with her teeming population, that existed in the narrow valley of the Nile, the immense standing army maintained, the extraordinary works of engineering and architecture, indicate an advanced state of agriculture, of which floriculture is an important and necessary adjunct.

In Babylon, a dense population was supported in the plains bordering the Euphrates.

The Scriptures make frequent reference to the operations of the plant cultivators of Palestine. The hill-sides were covered with vines and olives. Some cereals were cultivated. The large number of inhabitants that Palestine supported under the Jews, is the wonder of all modern travelers, who are struck with the desolation of the country. The means of cultivation, however, disappeared with the inhabitants.

History tells us that the old Romans considered the cultivation of plants and flowers as a fit pursuit to be directed by men of wealth and learning.

Cato, who died 150 years B. C., was the first and most celebrated agricultural writer. He has given us minute details in regard to the cultivation of many plants.

Turn to Spain, and we find during the time of the Moors, the valley of Granada to be one well-cultivated garden.

As far back as the sixteenth century, we find England paying much attention to plant culture.

So we might go on, learning of the nations of antiquity in regard to plant and flower culture, but those of which we have spoken are sufficient to prove to us that with the advancement of civilization, we find the advancement of plant or flower culture. And that, to all these nations there has been a benefit physically; a drawing out of the physical powers, and hence, according to the definition, a *physical education*.

That definition also states that education is a discipline of the intellect. Teachers at the present day study and hear much of psychology. It endeavors to teach what faculties are earliest developed in the child's mind; what faculties are later developed; and gives

due consideration to the best methods for utilizing these faculties. The most important physical question is involved in determining the relative activity and development of the several intellectual powers in the successive periods of life.

Object lessons learned in childhood are never forgotten. Children love to study of flowers, and *we* are but children of larger growth. The capacity or power of the mind is increaaed by its repeated exercise. It is a law that every act of the mind leaves, as a necessary result, an increased power to act in like manner, and to act again. In harmony with the law, the physical feelings may all be cultivated by proper exercise. Applying the definition of education, and the reasonings of psychology, do we find any mental drill in the study of flowers?

In examining or studying a flower, for instance, the violet or rose, the mind perceives the perfect plan on which it is constructed. (Nature's plans are always perfect.) Following the law that the mind tends to act again in like manner wherever the same mathematical precision, perfect symmetry of proportion and constant regularity, or exquisite harmony, is presented, in whatever form, the mind instantly perceives it. Hence, not only the student of botany, but of the other sciences, and of mathematics, by the laws of association, may find much mental drill in the study of flowers. We are much inclined to view the workings of nature from the inside of four walls, and thus to reason and theorize, instead of learning directly from our teacher.

Over twenty centuries ago, Aristotle instigated this method of reasoning. For several hundred years we find this method robbed of its veneration for nature, and perverted by many unwarranted interpretations holding the intellect in thraldom. In the sixteenth century, we find Francis Bacon, with intellect keen enough, with spirit bold enough, to refute the methods taught, to claim it should not be *abstract truth*, but *fruit* for which we should aim. We find before Bacon's time scholasticism, like a huge break-water, skirting the sea of thought. For three centuries it had broken the wave of every advancing opinion. But as the fifteenth century drew to its close, the sea gave indications of an approaching storm—the sky was overcast by portentious clouds, wave after wave came rolling shoreward from the ocean of free thought, and at last the surge of the reformation burst with terrifying roar against this time-worn scholasticism, tumbling it out of the way. Then thought advanced. Why? Because, from henceforth, nature was the teacher. Individually, we need to consider that thought. Go to nature. Study her forms. "Behold the lilies of the field; they toil not, neither do they spin, and yet Solomon, in all his glory, was not arrayed like one of these."

Is there no moral education in flowers? He who cares for flowers, lives in direct communication with nature. To him she

gives her choicest gifts, and we are led through nature up to nature's God. Behold the flowers nodding at our feet, which a kind God has poured abroad with such profusion. All these countless ministers of God teach their endless lessons of peace, purity and love. Fresh, sweet flowers chase away the gloom and sadness from many an invalid's cheek, and bring the smile of happy contentment and sweet resignation. They are showered in profusion when the wedding bells peal their merry chime. They are placed on the caskets of our loved ones as they lie in quiet rest, or sleep in "the silent halls of death."

Our nation has set apart a day to decorate and strew flowers on the graves of our countless dead, those noble souls who went down in death, that the nation might live.

We should not be ashamed to confess that the leaves of that great book of revelation which God opens every morning, and spreads in the valleys, on the hills, and in the forests, are rich in marvellous lessons we could read nowhere else.

"Give fools their gold, and knaves their power;
Let fortune's bubbles rise and fall;
Who sows a seed, or trains a flower,
Or plants a tree, is more than all.

"And, soon or late, to all who sow,
The time of harvest shall be given;
The flowers shall bloom, the fruit shall grow,
If not on earth, at last in heaven."

MEETINGS OF THE EXECUTIVE BOARD.

SPRINGFIELD, Feb. 28, 1889.

THE Executive Board of the State Horticultural Society convened at the Revere House in the City of Springfield, Feb. 28th, 1889. Present: H. M. Dunlap, President; A. C. Hammond, Secretary; C. N. Dennis, F. I. Mann, Wm. Jackson and J. S. Browne.

President Dunlap—The rules of the Board of Management of the State Experiment Station provide that one Director shall be appointed by the State Horticultural Society. It will, therefore, be our duty to-day to appoint some one to this position, and I think we should also outline the work that we desire to have done.

Mr. Dennis—I want to see the questions of the effect of stock upon scion, and of seed from perfect and imperfect fruit, upon the hardiness of trees, thoroughly tested. It will take time to secure results, and I should like to see the work begun at once. Another valuable experiment would be to graft some varieties of poor quality, say Ben Davis into Duchess, Wealthy, Grimes' Golden, Jonathan and Priors' Red, to decide whether it will improve the quality of the fruit, or hardiness of the tree.

Mr. Browne—I should like to have seed selected from a long keeping, hardy variety, like Priors' Red, from a long keeping tender variety like Smith's Cider, from an early hardy variety like Duchess, from an early tender variety like Red June, from the Wild Crab, and from defective apples. Grow them separately and graft all to Ben Davis. When they come into bearing we would readily see whether seed and stock had any influence on the keeping qualities or flavor of the fruit, or hardiness of the trees.

Mr. Jackson—I think we should work on general principles until we get the work well under way, but there are some special lines that seem to demand immediate attention. Among these are spraying fruit trees for insects, and investigation of the blackberry rust.

Mr. Dunlap presented the following elaborate diagram of a plan of experiments that he thought might be advantageously adopted. He said it would take years to complete this series of experiments, but we should lay the foundation deep and broad, with an eye to the superstructure that was to be reared thereon in the future.

DIAGRAM OF HORTICULTURE EXPERIMENTS.

- Experiments in Horticulture.
  - Trees and plants.
    - Testing varieties of.
      - Adaptability, - - - - - - -
        - Of scion to stock,
        - To soil,
        - To locality,
      - Hardiness, - - - - - - -
        - Of top worked stock.
        - Of root grafts.
      - Productiveness, - - - - -
        - Of new varieties.
        - On different soils.
        - In different sections of State.
      - New varieties, - - - - -
        - Seedlings from cross fertilization.
        - " " hardy varieties.
        - Cherry seedlings.
    - Enemies of.
      - Fungoid growths.
        - On foliage,
          - Orange rusts.
          - On fruit trees.
          - On ornamental trees.
        - On fruit,
          - Apple.
            - Scab
            - Bitter rot.
            - Black rot.
            - Brown rot.
            - Mildew.
          - Grapes.
      - Insects.
        - Foliage,
          - Tent caterpiller.
          - Leaf roller and crumpler.
          - Canker worm.
        - Woody structure.
          - Borers.
          - Bark lice.
        - Fruit,
          - Curculio.
          - Codling moth.
  - Soil culture.
    - Manures.
      - Summer mulching.
        - With straw,
        - With cornstalks.
        - With small grains.
      - Winter mulching.
        - With clover.
        - With barnyard manure.
        - With fertilizer.
    - Treatment.
      - Clear culture.
      - Clover.
      - Grasses.
      - Mixed culture.
      - Under drainage on low grounds.

Mr. Mann—I move that the outline of work presented by the President be adopted and that we request our representative on the Board of Directors to carry it out as nearly as possible.

Motion adopted.

On motion, the Board proceeded to the election of a representative on the Board of Directors of the State Experiment Station. After several ballots Mr. H. M. Dunlap was declared to be elected.

Mr. Browne—I move that a committee of three be appointed, who, in connection with the Secretary, shall have a general supervision of the experiment work to be done at the nine branch stations provided for by the Board at its last meeting, with power to act, and that the President and Secretary be authorized to draw warrants to pay necessary expenses.

Motion adopted, and J. S. Browne, C. N. Dennis, and Arthur Bryant named as the committee.

Mr. Dennis said that the day that we had recommended for Arbor Day was "Good Friday" and that the Governor had been requested to name a different date. He, therefore, moved that a committee of three be appointed to wait on the Governor, and request him to name the 26th of April.

The motion was adopted, and C. N. Dennis, F. I. Mann and A. C. Hammond appointed.

The following bills were allowed and ordered paid:

J. S. Browne,	expense bill			$ 6.50
C. N. Dennis,	"	"	and cash advanced	12 80
Wm. Jackson,	"	"		6.20
F. I. Mann,	"	"		8.10
H. M. Dunlap,	"	"	and cash advanced	19.88

H. M. DUNLAP, *President.*

A. C. HAMMOND, *Secretary.*

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NORMAL MEETING.

NORMAL, May 15th, 1889.

THE Executive Board of the State Horticultural Society convened in the Sweeny Hotel, Normal. Present: H. M. Dunlap, Arthur Bryant, C. N. Dennis, F. I. Mann, J. S. Browne, Wm. Jackson and A. C. Hammond.

After a long and earnest informal talk in relation to the best method of conducting the Horticultural Experiment Stations, the following rules were adopted:

[See rules on page 74.]

In order to be able to conform to these rules, the appointment of the Committee on Experiment Work, made at the January Meeting, was, on motion of Mr. Browne, reconsidered.

On motion of Mr. Mann, the Secretary, Arthur Bryant, and J. S. Browne were named as the committee.

On account of the extra amount of work imposed upon the Secretary, it was, on motion, ordered that his salary be increased one hundred dollars per year.

On motion, the Secretary was instructed to procure suitable blank books for the use of the station directors.

On motion, the following bills were allowed and ordered paid:

J. S. Browne,	Expense	Board	Meeting		$ 12 95
C. N. Dennis,	"	"	"	and cash advanced	14.46
H. M. Dunlap, cash advanced					14.08
Wm. Jackson,	Expense	Board	Meeting		12.25
Arthur Bryant,	"	"	"		8 50
F. I. Mann,	"	"	"		5.60
A. C. Hammond,	"	"	"	and cash advanced	20.95
H. M. Dunlap,	"	"	"		5 50

H. M. DUNLAP, *President.*

A. C. HAMMOND, *Secretary.*

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HAMILTON MEETING.

HAMILTON, December 11th, 1889.

THE Executive Board of the State Horticultural Society convened at the Riverside Sanitarium Hotel. Present: H. M. Dunlap, Pres.; A. C. Hammond, Sec'y; Arthur Bryant, A. Dunning, F. I. Mann, H. L. Doan, Wm. Jackson and E. A. Riehl. (Proxy for J. S. Browne.)

The Secretary presented four bids for printing, which were carefully canvassed by the Committee, after which it was decided to award the contract to the Sentinel-Democrat Printing Co., Alton.

On motion, a committee was appointed to examine the report of the Secretary and Treasurer. The President appointed E. A. Riehl, F. I. Mann and H. L. Doan.

December 12th, 1889.

The Board met pursuant to adjournment. Present, all the Board.

On motion, T. E. Goodrich was appointed Director of Horticultural Station No. 9, to fill the vacancy caused by the resignation of Mr. Vaughan.

On motion, it was ordered that the President pay the hotel bills of delegates from other States.

The Committee on Secretary's and Treasurer's Reports reported that they had found them correct.

Mr. Riehl moved that the President be instructed to appoint a delegate to the Iowa Meeting. Carried.

On motion, L. R. Bryant was appointed a special committee to examine the delayed exhibit of Jacob Auer. Mr. Bryant reported the exhibit a very creditable one, and recommended that a special premium of four dollars be awarded him. Carried.

After consultation with the Board, the President called a meeting of the Executive Board at Sandwich, Jan. 7th, 1890. It was also decided to call a meeting of the Directors of the Experimental Stations at that time.

On motion, the following bills were allowed and ordered paid:

A. Dunning, Board meeting	$ 18.75
F. I. Mann, *ad-interim* work	3.60
W. H. Ragan, expense bill	21.70
A. C. Hammond salary and expense bill	308 83
H. M. Dunlap, Board meeting	5.50
H. L. Doan, " "	6.60
F. I. Mann, " "	8.75
E. A. Riehl, " "	15 50
Wm. Jackson, " "	14.70
F. I. Mann, " "	13.65
E. A. Riehl, expense as delegate	9.95
A. C. Hammond, board meeting	8.00
A. C. Hammond, expense bill	4.80
C. W. Prescott, experiment work	7.40
Phil Dallam, printing bill	28.00
J. S. Browne, experiment work	12.32
H. K. Vickroy, commission	56.29
J. Webster, experiment work	4.55
A. C. Hammond, *ad-interim* work	38.78
H. M. Dunlap, " "	38.84
H. M. Dunlap, experiment work	18.95
F. I. Mann, experiment work	6.55

A. Bryant, board meeting	$ 13.35
C. N. Dennis, expense bill	4.45
J. T. Johnson, Asst. Secretary	10.00
H. M. Dunlap, delegates' hotel bills	6.75
J. V. Cotta, experiment work	31.15

H. M. DUNLAP, *President.*

A. C. HAMMOND, *Secretary.*

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SANDWICH MEETING.

SANDWICH, January 7th, 1890.

THE Executive Board of the State Horticultural Society convened at the Sandwich House with the following members present: H. L. Doan, acting President; A. C. Hammond, Secretary; Arthur Bryant, F. I. Mann, E. A. Riehl and William Jackson.

Mr. Riehl moved that the hours of convening the sessions of our Annual Meetings be fixed at 9 A. M., 2 P. M., and 7 P. M. Carried.

He also moved that Profs. Forbes and Burrill be invited to read papers at our Annual Meetings, and spend as much time with us as possible, and that we hereafter pay their traveling expenses. Carried.

On motion, it was ordered that the Awarding Committees shall hereafter consist of three persons.

On motion, it was ordered that a sum, not to exceed $400, be offered for premiums at the next Annual Meeting.

On motion, the Board proceeded to revise the premium list. (See premium list).

On motion, the President was authorized to appoint a competent person as Superintendent of Exhibits at the next Annual Meeting.

On motion, the Secretary was instructed to procure an engraving of Prof. Forbes for insertion in the next volume.

The Board now proceeded to the appointment of the Standing Committees. (See list).

SANDWICH, January 8th, 1889.

The Committee met pursuant to adjournment. Present—the same members as yesterday.

Mr. Riehl moved that the *Ad-interim* work be placed in the

hands of the President and Secretary of the State Society, and Presidents and Vice-Presidents of the District Societies with instructions to perform it themselves or employ other suitable persons. The reports to be compiled by the Presidents of the District Societies for the Annual Meeting. Carried.

On motion, Rule of Exhibition IV. was stricken out and replaced with the following: All entries shall be limited to the State, except New and Seedling Fruits.

On motion, it was ordered that the old members, hereafter, be handed their Badges as soon as they arrive at the meeting.

On motion, the Standing Committee on New Fruits was dispensed with, and the Committee of Control instructed to investigate and report on the subject.

On motion, it was ordered that a committee be appointed to confer with the State Board of Agriculture in regard to premiums on Horticultural products at the State Fair. Motion adopted and H. M. Dunlap appointed.

On motion, it was ordered that the usual appropriation of $50.00 be made to each of the three District Societies.

On motion, H. M. Dunlap was elected his own successor, as Director of the State Experiment Station.

Ordered that 3,000 copies of Transactions be printed, instead of 1,500, as heretofore.

On motion, it was ordered that the reports of Local Societies be restricted to ten pages each.

Ordered that Vol. XXIII. be distributed as follows: 300 to the Legislature, 100 to each District Society, 25 to each Local Society, exchange with other States 150, Agricultural Colleges, Experiment Stations and Public Libraries 200, State Board of Agriculture and State Officers 100, Newspapers 75, Members of the Board 25 each, Directors of Experiment Stations, who are not members of the Board 25 each, and 25 to each Farmers' Institute until the supply is exhausted.

The Secretary read a communication from the State Grange, which was ordered to be placed on file.

On motion, it was ordered that the recommendation of the date for Arbor Day be left in the hands of the Secretary.

On motion, it was ordered that the Secretary be allowed $50 00 for office rent, lights and fuel.

Arthur Bryant was, on motion, elected a member of the Committee of Control from the Northern District, and E. A. Riehl from the Southern.

On motion, the Directors of Experiment Stations were instructed to test the question of top-working apple trees on hardy stocks, and the efficacy of different applications to prevent the ravages of borers.

Mr. Dunlap was instructed to test the question of spraying grape vines with fungicides as a preventative of rot.

On motion, Mr. Cotta and Mr. Mann were authorized to test the Russian question as they have a number of trees already planted.

On motion, the other recommendations of the Directors were referred to the Committee of Control.

On motion, the President was authorized to appoint delegates to Horticultural Societies and kindred organizations.

The Secretary presented the following report of expenditures for experimental work up to date:

1889.

Feb. 28,	Expense of Springfield Board meeting	$ 35.88
Mar. 20,	Trees, express, labels and postage	29.71
May 18,	Blank books, postage on trees and printing	4.40
" 16,	Expense of Normal Board meeting	72.25
" 18,	Plants and express	16.15
Aug. 3,	Strawberry plants and express	30.32
Sept. 24,	Expense of Committee meeting, at Peoria	30.82
" 24,	Trees	43.66
" "	Expense of Station No. 1, A. J. Bryant, Director	10.10
" "	" " " " " 2, J. V. Cotta, "	31.15
" "	" " " " " 3, C. W. Prescott, "	7.50
" "	" " " " " 4, H. M. Dunlap, "	18.95
" "	" " " " " 5, A. C. Hammond, "	88.55
" "	" " " " " 6, F. I. Mann, "	6.55
" "	" " " " " 7, J. Webster, "	4.55
" "	" " " " " 8, J. S. Browne, "	33.77
" "	" " " " " 9, T. E. Goodrich, "	4.25
" "	Expense of Directors' meeting	96.21
	Total	$ 561.77

Leaving a balance of $438.73 of the $1,000 appropriated by the Legislature, to be expended in horticultural experiments, under

the direction of the Executive Board of the State Horticultural Society during the fiscal year which expires July 1st, 1890.

The following bills were audited and ordered paid:

A. Bryant, Experiment work	$ 5.65
A. C. Hammond, " "	9.05
A. C. Hammond, " "	19.67
J. S. Browne, " "	22.50
T. E. Goodrich, " "	23.90
H. M. Dunlap, " "	7.21
H. L. Doan, Board meeting	21.91
F. I Mann, Experiment work	10.25
E. A. Riehl, Board meeting	23.00
A. C. Hammond, Office rent, fuel and lights	50.00
T. E. Goodrich, Experiment work	4.25
Wm. Jackson, Board meeting	22.70
J. V. Cotta, Experiment work	7.03

H. L. Doan, *Acting President.*

A. C. Hammond, *Secretary.*

TRANSACTIONS

OF THE

ALTON-SOUTHERN ILLINOIS HORTICULTURAL SOCIETY.

REPORTED BY

F. C. RIEHL, SECRETARY.

OFFICERS FOR 1890.

President, - - - -	E. A. Riehl, Alton.
Vice-President, - - -	Wm. Jackson, Godfrey.
Second Vice-President, - -	J. G. Vaughan, Odin.
Secretary, - - - -	J. S. Browne, Alton.
Treasurer, - - - -	S. F. Connor, Alton.
Librarian, - - -	H. G. M'Pike, Alton.

CHAIRMEN OF COMMITTEES.

Orchards, - - -	Jas. Davis, Godfrey.
Vineyards, - - - -	J. S. Browne, Alton.
Small Fruits, - - -	Wm. Jackson, Godfrey.
Vegetables, - - - -	J. M. Pearson, Godfrey.
Ornamental Planting, - -	H. G. M'Pike, Alton.

CONSTITUTION.

I.—This organization shall be known as the "'Alton-Southern Illinois Horticultural Society."

II.—Its object shall be the advancement of Horticulture.

III.—Its members shall consist of persons elected by a majority of the votes cast, who have paid an annual fee of Fifty Cents; and of honorary members of distinction in Horticulture and Agriculture.

IV.—Its officers shall consist of a President, two Vice-Presidents, a Secretary, a Treasurer, and a Librarian; all of whom shall be elected at the first regular meeting in the year, and shall hold their office one year, or until their successors in office are chosen.

V.—The officers of this Society, and the Chairman of the Standing Committees, shall be chosen by ballot, at the regular meeting in January, and a majority of all the votes cast shall be necessary to a choice.

VI.—There shall be the following Standing Committees: 1. On Orchards. 2. On Vineyards. 3. On Culinary Vegetables. 4. On Small Fruits. 5. On Ornamental Planting.

VII.—The Society shall hold monthly and other meetings and exhibitions, as it may direct.

VIII.—This Constitution may be amended at any regular meeting, by two-thirds of the whole number of votes cast, one month's notice having previously been given.

MONTHLY EXHIBITION.

To increase the interest in the Society's work, will be paid for exhibits of fruits, flowers and vegetables exhibited at the meetings, under the following

RULES:

1. Premiums will be paid for meritorious exhibits of fruits, flowers and vegetables shown at the monthly meetings of the Society.

2. To be awarded by the committees appointed to examine and report on same.

3. Premiums to range from one dime to one dollar.

4. Not more than five dollars to be awarded at any meeting, unless otherwise voted at a previous meeting.

5. No premiums to be awarded except when there is not less than fifteen dollars in the treasury.

6. No premiums to be paid except to members.

7. Premiums not called for within thirty days to be forfeited.

8. All exhibits must be correctly labeled, and a list furnished to the Secretary, or no premiums will be awarded.

LIST OF MEMBERS.

Wm. Armstrong.....Alton.
Wm. Barter.....Attila, Williamson Co.
J. S. Browne.....Alton.
J. C. Beeby.....Girard.
Mrs. Geo. Churchill.....Godfrey.
N. Challacombe.....Mellville.
Mrs. C. E. Collins.....Alton.
F. I. Crowe.....North Alton.
S. F. Connor.....Alton.
D. W. Collet.....Upper Alton.
Mrs. L. J. Clawson.....Upper Alton.
Geo. W. Copley.....Godfrey.
O. C. Dickerson.....Godfrey.
Jas. Davis.....Godfrey.
W. H. Fulkerson.....Jerseyville.
S. G. Gardner.....Kane.
E. Hollard.....Mellville.
Wm. Hyndman.....Godfrey.
G. W. Hilliard.....Brighton.
A. Howard.....North Alton,
Wm. Jackson.....Godfrey
Wm. Jackson, Jr.....Godfrey
Dr. E. C. James.....Upper Alton.
Mrs. J. B. Lathey.....Upper Alton.
Mrs. E. C. Lemen.....Upper Alton.
E. H. Lahee.....Alton.
Col. J. R. Miles.....Miles Station.
T. R. Murphy.....Upper Alton.
H. G. M'Pike.....Alton.
J. M. Pearson.....Godfrey.
E. A. Riehl.....Alton.
F. C. Riehl.....Alton.
Jno. Riggs.....Godfrey.
Ed. Rodgers.....Upper Alton.
Robert L. Smith.....Mellville.
O. A. Snedecker.....Jerseyville.
Edward Simms.....Upper Alton.
D. Q. Trotter.....Piasa.
G. W. Tindall.....Upper Alton.
P. E. Vandenburg.....Jerseyville.
Mrs. T. P. Yerkes.....Upper Alton.
J. H. Yager.....Alton.

PROCEEDINGS

OF THE

Alton-Southern Illinois Horticultural Society.

Reported by F. C. RIEHL, Secretary.

FEBRUARY MEETING.

The Alton-Southern Illinois Horticultural Society met at the office of H. G. M'Pike on Saturday, Feb. 9th, 1889.

Meeting called to order by President Wm. Jackson.

ORCHARDS.

Jas. Davis—All orchards are in the very best condition at present. Think I never saw peach buds in as good shape at this time of the year as they are at present. If we get no late spring frosts those who have good trees may expect a fine crop of peaches. The coddling moth has now become so plentiful here that I think apple growing must soon become a total failure with us, unless we resort to spraying. Now is the time for pruning all orchard trees.

E. A. Riehl—I have been cutting out the dead limbs of my old pear trees. Think this will help them. But this should not be done oftener than once in four or five years on old trees and never on young ones. Are any of you acquainted with the Le Conte pear? I have a young orchard of them and they grow finely, but seem very subject to blight. I have also been informed that they are liable to rot at the core before ripening.

J. S. Browne—I have one tree of Le Conte, which is now five years old and about fourteen feet high, and has as yet borne but two pears. I think it grows so fast that it has not time to bear. But the pears have a fine appearance and are of good quality.

Mr. Riehl—In our location we must grow early pears for profit. For with these, as with grapes, eastern and northern growers supply the market with large quantities later in the season and

prices rule lower, while early ripening varieties bring high prices. I have tasted the Idaho and liked it very much; it is large and handsome; think it much better than Keifer.

F. I. Crowe—What does it cost to spray?

Mr. Browne—Hardly anything after you have the apparatus. Spray as soon as the flowers drop, and then about ten days later. For spraying plums a much weaker solution must be used than is used on apples. Am afraid we cannot use the spray on peach trees at all. The leaves are too tender. They tried it in Southern Illinois and all the leaves dropped off the trees.

Mr. Riehl—It may have been caused by their using a poor pump. It will not pay to use anything but the best apparatus. If the pump has not a pressure of nearly one hundred pounds to the square inch, the spray will be too coarse, and will collect in drops on the lower edge of the leaves, thus burning and causing them to drop off. The Nixon Machine Company have now brought their prices down to a very reasonable rate. I believe their's to be the best pumps and nozzles made.

VINEYARDS.

Pruning should all be done by this time.

Mr. Pearson—I have in a row of perfectly healthy Nortons' Virginia, two vines that suddenly died last summer and became black down to the roots. What was the matter with them?

Mr. Riehl—There is a beetle, black, and about two inches in length, that sometimes gets under a vine and eats off the roots. Perhaps if you will look you may find them at the bottom of this mischief.

Mr. M'Pike—I think blue grass the best preventive for rot. My Concords, where in blue grass, were good, even last year.

Mr. Browne—I shall set out next spring 800 Moore's Early and Brighton. Have found them the best of all early grapes.

REPORT OF CULINARY VEGETABLES.

BY J. M. PEARSON, GODFREY.

Mr. President:—I do not intend, in this report, to lay down rules calculated to guide the professional market gardener. I will try, however, to write something that will put the farmer and fruit grower in remembrance of some things necessary to be done to insure a continued supply of fresh vegetables, for

family use, during the summer months. First, a small enclosure is necessary, for otherwise domestic fowls will destroy all early plants. This enclosure need not be large, as later in the season, with plenty of other things in sight, the damage is small. The fence must be as open to the sun as possible, and still keep out a hen. I have often been surprised to note the difference in growth of plants, early in the season, made by the shadow of a very light fence. There is an alternative to this, and that is to fence in the fowls, but they don't like it as well as to roam "fancy free." The soil must be rich; give it plenty of manure —old and well rotted if possible. Peas, seedling onions, beets and salsify, should go into the ground as early as possible. You need not wait for the ground to be warm and dry. I generally plant in the first half of March. I do not believe it will pay you to make a hot bed. It is cheaper to buy cabbage and tomato plants than to raise a few. The same will be true of sweet potato plants. If you have not already an asparagus bed, prepare for one as soon as the ground will work easily; buy *young* plants; do not take old ones, as a gift. Give them plenty of room. Radishes and lettuce may be planted with the first things. I would plant Landreth's Extra Early pea first, and follow it with American Wonder one week later, a double row, one foot apart, planted thick, and about one inch deep, will do. For an ordinary family, I would plant my rows about five rods long. Two plantings of American Wonder, and then one of Eugenie or McLean's Advance. Next month will try and go farther along.

Mr. Browne—I think that, as a rule, asparagus should be planted about four by three feet.

Mr. Riehl—My vineyard is planted eight by twelve feet, and there is a hill of asparagus between every two grape vines, and I believe the roots of the asparagus cover all the ground. By using plenty of manure, they may be planted closer, but if not manured they must have plenty of room.

Mr. Pearson—I have found that heavy mulching makes the asparagus come later; hence if your bed is large enough I would advise mulching every year. Cover one half this year and the other next so that you can get them early and late. Eugenia is a medium late pea of the finest quality, but is not a sure crop. Peas should always be picked before they are fully grown. If a pea cooks yellow it is no longer fit to eat. This is the sole cause of the great superiority of French over American canned peas.

Capt. E. Hollister—I think the Cow Pea ought to be more generally planted than it is. It is unsurpassed as stock feed and

also good for table use. Besides they are a benefit to the ground.

Mr. Riehl—I would not add Eugenia to the list of peas, as some people, following our advice, might be disappointed should they fail to get a crop, but would add McLean's Advancer instead. I think the Mammoth Sandwich Island salsify should supercede every other variety that I have yet seen. Northern potato growers now very frequently resort to the expedient of salting their potatoes to keep them from sprouting. Persons buying northern seed should be careful not to get these, or they will fail to get a stand. We can get new potatoes several days earlier by taking the seed and spreading it out very thin on shelves or the floor of a light cellar. They will start short, thick sprouts, and these will grow as soon as put into the ground.

Mr. Browne—This is the only way to get a stand on late potatoes in this locality. I get my seed from St. Louis about May 1st, and spread it out on the barn floor, leaving it there until after my strawberries are gone. Then plow up the patch, cut my potatoes with one sprout to every piece, paying no attention to eyes that have not sprouted. Then I plant them on the strawberry ground that has been plowed after the second crop has been picked and have never failed to get a crop.

ORNAMENTAL PLANTING.

Mr. Pearson—Has anyone had experience with the English Filbert?

Mr. Browne—Two years ago I planted five, the last one of these is now barely alive. They mildew badly.

Mr. Riehl—I got some from Philadelphia a few years ago, but they all died. Am now trying to grow them from the nuts.

This brought up a general discussion on nut-bearing trees. No two trees bear the same nuts, showing that, with these, as with fruit trees, seedlings never come true.

Everybody can and should have about the yard one or two walnut, pecan, hickory and chestnut trees.

Mr. Riehl—Has some young hickory trees, which are large enough but have yet shown no signs of bearing. Think he will try the effect of girdling.

Mr. Pearson—There will be a good many peach trees planted next spring. Would it not be well to give a list of the best varieties?

Upon this suggestion the following list was recommended: Amelia, Early York, Oldmixon, Stump the World, George the 4th, Salway, and Great Western instead of Heath, it being of the same color and quality and a better bearer. Parks' Cling similar to Heath in season and quality, but it is not white; hence people prefer the Heath. Salway is about the best very late freestone peach we have that ripens here.

Mr. Hollister then gave an interesting talk on peach and orange growing in Florida.

The committee appointed to pass on the apples tested at the last meeting reported as follows:

REPORT OF COMMITTEE OF ARKANSAS APPLES.

BY E. A. RIEHL.

Mr. President: Your committee to whom was referred the collection of seedling and new apples shown at our last meeting from Mr. E. F. Babcock, of Little Rock, Ark., beg leave to report as follows:

We found this a very interesting collection, of twenty varieties, being seedlings and varieties but little known, some of which promise to be valuable as good winter apples, of handsome appearance and fine quality. Some of the varieties your committee do not think of good enough quality to recommend them for trial, in the absence of any knowledge of the habit of the tree, &c. Besides, we already have so many varieties of apples that we think none should be recommended for trial, except they have a high standard of quality in combination with other desirable characteristics. We, therefore, only notice and recommend for trial the following:

Arkansas Black, very large, dark red, almost black, sub acid, crisp, quality best, apparently a late keeper.

Crawford, very large, golden color, quality best, very promising.

Red Russett, an apple resembling Pryor's Red, medium size, quality best.

Kossuth, red, large, sweet, very good.

No. 2, yellow with red cheek, medium size, acid, crisp, very good.

No. 1, light red, medium in size, quality almost best.

Arkansas Beauty, pale and red striped, very large, quality best.

No. 4, yellow with blush, medium size, spicy, very good.

The Treasurer made the following report, which was submitted to an Auditing Committee, consisting of John M. Pearson, E. A. and F. C. Riehl:

TREASURER'S REPORT.

S. F. Connor, Treasurer, in account with Alton-Southern Illinois Horticultural Society:

Cash on hand January 1, 1888	$42.90
Cash on sale of fruits and flowers	7.10
Cash dues from members	10.00
Dues from State Horticultural Society	50.00
	$110.00

CREDIT.

By Postage	$ 20	
By Express on books	60	
By Premiums paid	21.20	
" " "	14.10	
Cash on hand	73.90	
	$110.00	$110.00

Respectfully submitted,
S. F. CONNOR, *Treasurer.*

ALTON, Jan. 1, 1889.

The sum of one dollar for each meeting was voted to the Secretary to pay him for the lead pencils, scratch books, &c., used in compiling the report.

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APRIL MEETING.

THE Alton-Southern Illinois Horticultural Society held a Basket Picnic at the residence of Mrs. E. Hollard, in Upper Alton, on Saturday, April 20th.

The meeting was called to order at 11 o'clock by President Jackson.

ORCHARDS.

Mr. Davis—The prospect for a large crop of all orchard fruits is better than it has been for many years. Pears, peaches, plums and cherries are splendid, almost without exception. Peaches are fuller than I ever saw them. Apples, where not very full last year, are full of bloom. My Smith's Cider and Astrachan were full last year, and hence are blooming very lightly.

Messrs. Hilliard and Pearson—Reported very light bloom on Damson plums.

Mr. Browne—It will soon be time to begin spraying, and it may be well to warn people against making their mixture too strong. One pound of London Purple to 300 gallons of water is plenty for apples. Am afraid we cannot use it on peach trees. I sprayed one of mine last year and it is barely alive now.

Mr. Jackson—Had the same experience with two trees that he sprayed. It not only caused all the leaves to drop off, but actually killed the ends of all the small twigs.

Mr. Browne—In Southern Illinois, last year, they tried spraying peach trees with a solution of one pound of London Purple to 300 gallons of water, and even then some of the leaves fell off. Think we had better keep the spraying nozzle off the peach trees until we know more about it.

Mr. Pearson—Does spraying prevent the falling off of young apples that usually takes place soon after the fruit is set?

Mr. Jas. Davis---No! This occurs only when the tree is full, and the young fruit that drops off is not injured by insects. All fruit trees do this when overloaded. It is nature's way of disposing of superfluities.

Mr. Pearson---Has anything been done towards securing scions of the new apples that were recommended at our January meeting?

Mr. Browne---Messrs. Hammond, Riehl and myself have procured scions from Messrs. Babcock, Samuels and Kennan, and have distributed them at nine different points in the State.

VINEYARDS.

Mr. Browne---Vineyards are in good condition. Now, before they come into bloom, you should go through, and wherever there are two shoots starting from the same cane pinch off one. The grapes will be much better if this is done. Early Victor, especially, is liable to overbear if not thus treated.

Mr. Pearson—Do you intend to spray them for the rot?

Mr. Browne---Yes; I have procured a pump, which cost about $25, and shall use the Bordeaux mixture.

Mr. Jackson---Is not this rather expensive?

Mr. Browne---I think not; if by an expense of $30 or $35 we can save an entire crop of grapes, it will certainly pay, and some one must try the experiment. We have found that it does not pay to bag grapes for market. If the bags are put on right and in time, they will preserve the grapes, but even then the skin is so tender that they will hardly bear handling. For family use and for exhibition, bagging is all right, but for market purposes, we must find some other means by which to get ahead of the rot. Think Moore's Early and Worden are about the best market grapes we have. Generally speaking, White grapes are not so good for market as Black ones.

SMALL FRUITS.

Mr. Davis---Small fruits, like orchards and vineyards, are in the very best condition. If the season remains favorable, the question this year will not be how to get fruit, but where to find a market.

Mr. Jackson---On March 15th I burned off an old patch of Sharpless and Miner strawberries, and they are now apparently in splendid condition for a crop.

Mr. Jno. Riggs---Mr. Vandenberg, of Jerseyville, has a patch of red raspberries, principally Cuthbert, that are nearly all dead, though the plants look strong and healthy. What is the cause of this?

Mr. Browne---It is caused by a beetle that bores into the cane a few inches above the ground and deposits its eggs in it. This causes the immediate death of the cane.

Mr. Jackson---I have a patch of Brandywine Raspberries that are dead, but they *were not* killed by the beetle. What caused this?

Mr. Browne---Guess your patch is an old one, and they have exhausted the nutriment in the soil.

Mr. Jackson---I think this is the true solution, and I believe that this is one of the principal causes of rust on strawberries. When the patch gets old, the plants, having exhausted the plant food in the soil, become weak, and hence fall easy victims to the disease.

Mr. D. M. Hazlett---I think this quite probable; we find it so with human beings. An unhealthy man, if he go among contagious disease, is almost sure to fall a victim to it, while a man of good health and regular habits can go among it with impunity.

Mr. Pearson—This is all wrong. In the first place, I don't think the condition of blackberry plant has anything to do with its being infected with rust. This rust is a living germ that is borne by the winds and lights upon the leaf, and if it once takes root, it grows and spreads over the whole plant. So, also, with animals. I can inoculate and give any man the small pox, I care not how healthy he may be. About thirty per cent. of the hog family will not take pluro-pneumonia, but you can, by inoculation, give it to any of them. So, also, with the lump jaw on cattle. I can make it grow on the hip or flanks. So with the blackberry rust; if it once gets rooted in the leaf, the plant is doomed, be it ever so healthy.

Mr. Jackson does not think it necessary to grub up a plant that has rust. Cut it off with a hoe, and leave them lie.

Mr. Davis---I prefer to grub them up and carry them just as far away as possible. Two years ago I noticed one rusty plant in a small patch of Kattatinnys, but paid no attention to it. The next year the whole patch was rusty.

Mr. Pearson---We can, as yet, come to no definite conclusions on these things; all that we can do is for each to give his own observations, and, after a while, the sum of our experience thrown together, may light us to the right path.

REPORT ON CULINARY VEGETABLES.

BY J. M. PEARSON, GODFREY.

Only once in twenty-two years has the season been so favorable for early vegetables. I planted peas March 14th, and we have had no weather cold enough to hurt them, and they are now more than twelve inches high, and all other things are proportionately advanced. Early sweet corn has been out of the ground for more than a week. For the coming month, I would plant peas for a late crop, successive plantings of sweet corn, Egyptian, or Stowel's, at intervals of two weeks, cucumbers, melons, squashes and beans. Of squashes, I prefer, after four years trial, for winter, the "Essex Hybrid." It keeps well, and is, I think, superior to Hubbard. The Boston Marrow is best for fall

use. Sweet potato plants and tomatoes can be set after May 1st. Remember that success in a vegetable garden depends largely on the timely use of hoe. Keep the ground well stirred; do not wait for weeds to appear, but cultivate often.

The proceedings were here interrupted by the announcement of dinner, and, after prayer by Rev. D. M. Hazlett, the contents of the dinner baskets were brought forth and quickly disposed of.

The President appointed J. S. Browne, E. A. Riehl and Jas. Davis a commmittee to arrange a premium list for display of strawberries, cherries and flowers at the June Meeting, and the sum of twenty dollars was voted to be awarded in premiums at said Meeting.

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JUNE MEETING.

The Alton-Southern Illinois Horticultural Society gave a basket picnic at the residence of Mr. Wm. Hyndman, near Godfrey, on Saturday, June 1st.

Mr. Hyndman is one of our most enterprising and successful horticulturists. Though he has been but a few years in the business, his small place of ten acres is amply stocked with all kinds of small fruits. It is a model of neatness and order, and might furnish an example to some of our older members.

There was a large attendance, but the weather was so cold that many appeared with their overcoats on, and those who came without, lamented their neglect. The shortness of the minutes may be partly attributable to this fact, as a cold body and a loose tongue seldom go together. Some corn in Godfrey and vicinity was reported as having been severely frost-bitten on the night of May 30th.

Society called to order at 11:30 by President Jackson.

ORCHARDS.

Mr. Davis—Prospect about the same as at last meeting. Everything full except Damson Plums; of these, there seems to be a total failure.

Mr. Riehl—The peach trees have a good crop of fruit, but a better one of bugs, and the same may be said of apples. Both will need a good deal of thinning.

Mr. Hilliard—My apple trees are all full, and am thinning them.

Mr. Browne—My peach trees are not all full. Stump and Oldmixon, especially, are very thin.

VINEYARDS.

Mr. Browne---Now is just the time to put on bags; it should be done immediately.

REPORT OF COMMITTEE ON SMALL FRUITS.

BY E. A. RIEHL, ALTON.

Mr. President and Gentlemen: I have been too busy to make any observations except on my own grounds. Of strawberries the crop is poor, most of the later part of the crop being buttons, the cause who can tell? May be that it is owing to unfavorable weather at the time of blooming. When the first blossoms came out the weather was warm, later the weather was cool and unseasonable. The first berries were the only perfect ones we got. All varieties were alike. My son had a small patch in a sheltered nook on the face of the bluff facing south and there was the best crop on the place. Of the newer ones, Bubach and Haverland, seem to be valuable. Hart's Minnesota is a large, productive berry of good quality, rather soft, but would be good for a local market. Jessie, Belmont, Ontario and Monmouth are not productive enough.

I would advise all our growers to cultivate their berries well and put down all the early runners, for we may have a dry summer and fall, and if so it will be the early made runners that will fruit next year.

Raspberries look well and the crop promises to be good.

Of blackberries the crop promises better than for several years. There is also more rusts among the plants than I have seen for years, which should all be cut out as soon as discovered. We need better varieties of the blackberry, we have none that are entirely satisfactory. The Kittatinny is tender and too subject to rust. The Lawton is rather too tender and too apt to turn red after picking. The Snyder is all right except that it is too small. A really good blackberry that is hardy, healthy and productive is wanted and if early so much the better.

DISCUSSION.

Mr. Browne—I do not think that the strawberries were injured by frost or dry weather. I think the thrips are to blame for the trouble. They are very thick this year. Prof. Forbes, of Cham-

paign, offers as a remedy Bird Lime, or oil sprayed on the plants, this makes the leaves sticky and the insect when he alights on it is held fast and dies. On some plants sprayed with oil they found thousands of these insects dead a short time afterwards. This insect sucks the nutriment from the plant and eats the pollen, so that it cannot pollenize. Hence the strawberry buttons which we have in such abundance.

Mr. Vandenburg—If this be so how does it come, then, that the berries are good on the outside of the row and poor in the middle?

Mr. Browne—The berries are bound to be better on outside of row, notwithstanding the insects, as the sun can get at them there; hence I do not believe in having wide rows. Put the rows close together and have them narrow, not over a foot, then the sun can get at and ripen all the berries alike.

Mr. Armstrong—Does anyone know anything about the Eureka strawberry?

Mr. Browne—No more than that the nursery men who have it to sell are making a big fuss over it. We have it, but have not fruited it yet.

Mr. Davis—Shall still plant Downing in preference to every other variety.

REPORT ON CULINARY VEGETABLES.

BY J. M. PEARSON, GODFREY.

The work of June is to take care of what has been done, rather than to plant more. Sweet corn is almost the only thing we need to plant. Turnips will be sown in July and August and cabbage plants set in July. We have succeeded with the curled Savoy by setting the last of June. The late rains have started millions of weeds, and these must be killed and the ground kept loose. Lima beans often need help in starting their race up the poles; tie them with a wilted straw. Pull up the old pea vines and throw to the hogs, and do not let a crop of weeds take their place. If rich enough it will be a good place to sow a few turnips by and by.

DISCUSSION.

Mr. Jackson—Thinks it not too late yet to plant peas.

Mr. Riehl—If the weather remains wet it is not too late yet, but should it become dry, as is likely, they would not mature.

REPORT OF COMMITTEE ON FRUIT EXHIBITED.

The collection of strawberries on exhibition is very fine in appearance. For size and shape, they are all that can be expected, but the flavor is not so fine as it would have been had we had hotter weather for the past week. We recommend the following awards:

For Largest and Best Collection—First premium, Wm. Jackson, twenty-five varieties; Second, J. S. Browne, fourteen varieties.

For Best Quart, Size and Shape, Considered—First premium, J. S. Browne, on Sharpless; Second, Wm. Jackson, Jersey Queen.

For Best Quart, Quality and Size, Considered—First premium, E. A. Riehl, Belmont; Second, E. A. Riehl, Great Ontario.

For Best Quart for Market—First premium, J. S. Browne, Jessie; Second, Wm. Jackson, Jersey Queen.

Best Quart for Family Use—First premium, Wm. Jackson, on Golden Defiance; Second, John Riggs, Miner.

Best Quart of New Variety for Market---First premium, J. S. Browne, on Jessie; Second, J. S. Browne, Haverland.

Best Quart of Seedlings, Good Enough to be Recommended---First premium, E. A. Riehl on his "No. 2."

Best Quart of New Variety for Family Use---First premium, J. S. Browne, on Jessie; Second, Wm. Jackson, Belmont.

Best Quart of Capt. Jack---First premium, J. S. Browne; Second, P. E. Vandenburg.

Best Quart of Miner---First premium, Jas. Davis; Second, John Riggs.

Best Quart Downing---First premium, Wm. Hyndman; Second, F. I. Crowe.

Best Quart of Sharpless---First premium, J. S. Browne, Second, F. I. Crowe.

Best Quart of Bubach---First premium, J. S. Browne; Second, E. A. Riehl.

Best Quart of Monmouth---First premium, J. S. Browne.

Best Quart Jessie---First premium, J. S. Browne.

Best Quart Cumberland---First premium, J. S. Browne.

Beautiful specimens of "Willow" apples, in fine condition, were shown by Mr. Vandenburg; Winesap and Newton Pippin, by Mr. Hyndman, and Gilpin, by N. Challacombe.

JULY MEETING.

The Alton-Southern Illinois Horticultural Society met and enjoyed the cordial hospitality of Mr. Wm. Armstrong, on Saturday, July 6th. Mr. Armstrong's pleasant home is situated on State Street Hill, in the northern limits of Alton city, and stands in a fine natural grove; some of the tree trunks are covered with a fine growth of American Ivy, and are very pretty. The handsome grounds are enclosed with hedges of arbor vitæ, Pyrus Japonica and Russian mulberry. Altogether it is an ideal suburban home. Mr. A., on being asked if he was not a happy man, said that he did not know, but those who knew him supposed him to be so; and surely he should be so, if happiness is ever attained on earth.

The day was perfect and brought out a large attendance.

ORCHARDS.

Mr. Riehl—The apple crop seems to be short on most varieties, peaches are generally better, but where very full last year the crop is light. Early peaches have rotted badly and sold poorly. I consider early peaches a nuisance and shall never grow any more. Pears are fine, not overloaded, but have just a good crop.

Mr. Hollard—Apple crop very light.

Mr. Hilliard—Prospect for a crop of apples with me not so good as at the time of last meeting. The early varieties are very full and small. Winter varieties not full, peaches are loaded with fruit and bugs. Apples were considerably damaged by hail.

Mr. Browne—With me everything that bore excessively last year is light this, and *vice versa;* pears all full except Seckel, these almost a failure. Messrs. Challacombe, Copley, and Dr. Roberts have converted their apple orchards into the wood pile, think they will pay better there than anywhere else.

Capt. E. Hollister—We have on the stand to-day some very nice looking peaches, but their excellence is confined to looks. Bite one, and your vision of bliss is quickly dispelled, eat half a dozen and the probabilities are that you will soon have cause to regret it. I have found all these early peaches a nuisance. They always rot badly, and later in the season would be pro-

nounced unfit to eat. I believe there is money in growing peaches here. Alton peaches have a reputation in Chicago, but if we send them much such early stuff we will soon lose our good name. Nearly all these varieties, Amsden, Alexander, etc. are seedlings of the Hale's Early and are all alike. Georgia and other southern peach-growing states have made the same mistake, and are suffering for it. About the first good peaches we get are Troth, Early York, George the Fourth, and Mountain Rose.

Mr. Riehl—I agree with Capt. Hollister in his remarks, but think Early York better than Troth, but I think Amelia and Flater's St. John earlier and better than any others that have been named. Have grown them and know them to be good.

Mr. Pearson—This gives me a chance to say what every man so dearly loves to say. I told you so. I have always held that these early peaches were a nuisance, and think the best thing you, who have the trees, can do, is to grub them out. If you market them people get so disgusted with them that they will not buy good peaches when they come to market. Truly Alton peaches have a good reputation in Chicago, which you cannot afford to lose. Last year I had a talk with one of the leading fruit men there, and he asked me why they were receiving no more peaches from Alton. I told him that we had not had a crop since 1881, and hereupon he said that they had no good peaches since then. You cannot afford to put your good name in jeopardy by sending them such stuff as this.

VINEYARDS.

Mr. Armstrong—My grapes are in about the same condition as last year, they have rotted badly. I have not sprayed.

Mr. Browne—Should some leaves be affected by the rot, there is where it makes its first appearance. The fungus winters in the ground, in the spring it comes out and settles upon the leaves where it is first noticeable in the form of little brownish black spots, sometimes these are so thick as to utterly destroy the leaf. It grows to maturity in the leaf and then goes to the young grapes. I have sprayed with the Bordeaux mixture, using nine pounds of copper sulphate, and the same quantity of lime to thirty-one gallons of water, and I am perfectly satisfied with

the results. Am confident that I have saved my entire crop of grapes with it. To insure success you must begin spraying very early, as soon as the leaves come out. Think it requires about four applications; first, as soon as the leaves show; second, a week or so later when the leaves have matured, again as soon as they are out of bloom, and lastly, about ten days after the fruit has set. I am confident that it is a success and it is inexpensive, but must be done in time, if not done in time it does no good. Care should be taken not to get it on too thick; if allowed to collect in drops on the grapes it injures the skin, and renders them unfit for market.

Dr. H. N. Roberts—I have sprayed my vineyard four times with the Bordeaux mixture but cannot make so favorable a report. Until recently my grapes looked fine, but since the last heavy rains they are rotting badly, especially one patch where the soil is very rich. Here they are nearly half gone. I did not begin spraying until after fruit was set, and probably this is the cause of my ill success, still I am sure that it has done some good.

Mr. Jackson—Have not sprayed and my vineyard is in much better condition than last year. Goethe is almost free from rot.

Mr. Browne—Goethe mildews, and grapes that mildew do not rot. Have found that thick skin is no protection against rot. Vergennes, which is thickest skinned of all, is most subject to rot.

SMALL FRUITS.

Mr. Riehl—Raspberry crop has been fair, and prices low. Blackberry crop promises to be very large, whether the profits therefrom will be likewise remains to be seen. Rust was very bad early in the season but we took it all out, and have had none since. I think the wet weather has helped us to get rid of it. Kittatinny, of course, showed most rust. Snyder a little and Taylor none.

Mr. Browne—My strawberry crop was the best I have had for ten years. Wilson, Jr., is the best blackberry out, but has two bad faults, it is tender and is affected by insects. Wilson, Jr., and Wilson Early are identical.

Mr. Jackson—Lawton and Erie are also the same.

Mr. Riehl—I have tried the Lucretia Dewberry over which so much fuss has been made, and I am disgusted with it. It is a fine, large berry, but in flavor it is flat and not fit to eat.

REPORT ON CULINARY VEGETABLES.

BY J. M. PEARSON, GODFREY.

Mr. President: The work for the gardener this month is small; late cabbage may yet be set. Turnips should be planted. The Amber Globe is better than Purple Top. I have this year used a drill and like it very much. Sweet corn, for late use, can be planted, and if we get a few showers in August, will make a crop. Remember that the salvation of late cabbage depends upon killing the worms and frequent cultivation. Kill weeds.

Question—What is best for killing cabbage worms?

Mr. Pearson—Paris Green or London Purple; use about the same proportion as for potatoes. It can be used with impunity, as cabbage grows from the inside. The poison only reaches the outside leaves, and even this is almost sure to be washed off by rains. When the millers disappear there is no use applying more poison. Cabbage should be hoed very often, every day or two if possible.

Mr. Jackson—Has found common road dust a good remedy for cabbage worms.

Mr. Pearson—I have a motion to make. The Illinois State Horticultural Society has received from the State $1,000, to be expended in horticultural experiments; the results of these experiments, they say, will be published in their annual report. I think we should have these results sooner than this, we want to receive the benefit of these experiments as soon as possible. Therefore, I move that this Society request the Secretary of the State Society to publish results as soon as they have been ascertained and send them out in pamphlet form, to the district societies, and the local papers.

Motion carried.

Mr. Browne—I think this is the Society's intention, and I should have said before that what I have told you to-day, in regard to grape rot, is some of the first fruits of these experiments. Let us give the Society credit for all the work it does.

AUGUST MEETING.

The Alton-Southern Illinois Horticultural Society met at E. A. Riehl's on Saturday Aug. 10th. The muddy roads caused by late rains kept many from coming in vehicles, but the trains from Alton and Jerseyville brought many passengers, and the attendance was unusually large. It was a nice cool day, and many seemed to prefer walking about admiring the views, boating, etc., to attending the business session.

ORCHARDS.

Col. Miles—I shook all my early apples and fed to the hogs. Late ones do not promise very well. Apples have never paid me and I intend to grub out all my trees, and convert them to the wood pile.

Mr. O. A. Snedeker—I cut down an old orchard, and then found that I could not sell the wood, but finally I found a brick burner, whom, with hard begging, I persuaded to come and haul it off. So if the Colonel expects to get rich off his old trees he will probably get left instead.

Col. Miles—Thanks, Brother Snedeker, for your kindly warning, but if I were a young man again, I should plant apple trees. There have been none planted in this region for many years, and the old trees are all dying out and in a few years there will be a lack of this good old king fruit.

Mr. Riehl—Showed and passed around specimens of the Jefferies apple, now just in season. This is the best late summer apple we have. It is a mild sub acid, very agreeable to taste, apples always fair size and perfect in shape. Always bears full. A splendid apple for market or family use. The condition of apples generally as regards insects, I think, depends much on cultivation. Where well cultivated the fruit is pretty good, where the ground was not stirred and the bugs remained undisturbed fruit is very poor. Pears are very nice.

Question---What is the proper mode of cultivation for pears, and what varieties are most profitable?

Answer by Mr. Riehl---I would cultivate for about four years after planting, then seed down and leave it so, only mowing off the grass once or twice a season. Cultivation encourages blight,

and should be given up as soon as the trees have got a fair start. Have not had a plow in my orchard for fifteen years. I have just planted an orchard of Le Conte. I do not consider it a good or profitable pear; the tree is very subject to blight and the fruit rots at the core before ripening. But it is a fine grower and makes good roots. Hence I plant it and then after a year or two will graft over with any other desirable kind. Bartlett is perhaps the best paying of all, but with me Howell has always done just as well. We need a good early pear. All fruit, to be profitable with us, must be early. Our market is in the north and west, and we must get our fruit there before they have their own. A very good early pear is the Tyson. The Keifer is not a good pear for eating, but is unsurpassed for canning. Clapp's Favorite is no good; it rots at the core.

Mr. Jackson—What is the best to seed an orchard with?

Answer by Mr. Riehl---To insure a stand it is best to mix several kinds of seed and sow thick. The kind of grass in an orchard matters but very little, just so it covers the ground and kills out the weeds.

VINEYARDS.

Mr. Browne---Grapes have rotted very little since last meeting, not more than two per cent. I have a splendid crop.

Mr. Riehl—Have done no spraying. My grapes are nearly all gone. Jewell and Cynthiana have rotted but very little, nearly all others have rotted. Am not yet convinced that spraying will save them; we must experiment another year yet to be sure. Our friends, Hayden and Browne, are very fortunately situated, and no doubt their success is due partly to this fact. My grapes have not paid for work done on them and will dig out most of them.

REPORT ON SMALL FRUITS.

BY E. A. RIEHL, ALTON.

The harvest is past, and now is a good time to consider if we have learned anything and what had best be done in the future. In the way of strawberries we have no new varieties that can be recommended for extensive planting in place of old well tried sorts. Each planter should keep on planting those varieties that have proven most satisfactory with him, planting a limited area only of such newer varieties as promise well. I will, another season, make increased plantings of Bubach, Haver-

land and my own seedlings, but the main stand-by, as in the past, will be Capt. Jack. In the way of growing I know of nothing new, but have somewhat changed my methods. I plant in checks of three feet, and cultivate both ways early in the season and later only one way. I like to have my runners root early because I believe a plant made early in the season will be surer of bearing a good crop than one made later, I know that some varieties like Cumberland Triumph and Downing will give no fruit at all on late rooted plants.

I have noticed that the earliest and best berries grow on isolated plants and I think we will have better success if our rows are not so wide as we have been in the habit of growing them, and I propose to trim my rows down in the fall so they shall not be over eight inches wide. Prices have fallen so low for ordinary fruit that only that of the best quality will pay the grower. The time has gone by when quantity counted for more than quality. By quality I mean size and sound condition when it arrives on the market, not high flavor; few of the general public appreciate superior flavor enough to make it worth while to grow fruit with flavor in view. Large size and good carrying qualities are the main requisites. Of course the grower must also have a plant that is healthy and productive.

Of raspberries I have found the black caps more profitable than the reds. Tyler and Gregg are all the varieties one need to plant for market, they cover the whole season and are, all points considered, the best we have, though not perfect. The future may give us something better. The Tyler is early, very productive and hardy, but might be larger and of better flavor. The Gregg might be more hardy.

Of blackberries we have had the best crop that we have had for years, but prices were very low. We need a better blackberry than any of the old sorts, all have some fault. Those who this year saw my new one think it a very promising variety. I have grown it in a small way for some six or seven years during which time it has behaved so uniformly well that I am now propagating it as fast as I can and will plant it exclusively, and in a couple of years when I can show you a good large plantation of it in bearing, I will ask you all to come and see it in fruiting time and give your verdict as to its value.

DISCUSSION.

Question—What is the difference between Sohegan and Tyler?

Mr. Riehl—They are so nearly alike that one name might do for both. Those who have both can tell no difference between them, but say they would rather plant Tyler. Tyler pays better

than Gregg as it is earlier and does not run out as Gregg does after three or four years, but it is too small and sour. We do want a larger and better berry to take its place.

Mr. Jackson---I have a new berry, the Hilborn that has these qualities. I think it is the best berry I have seen.

Mr. Riggs---Raspberries have paid poorly this year, but the red paid me better than black caps.

Mr. N. Challacombe—How soon after the crop is off may raspberries be pruned?

Mr. Riehl—They should be pruned before the berries ripen. Begin in May and prune the young shoots back to 14 inches, never higher, go over them several times and do the same with all young shoots that grow up. The old wood may be removed in fall or early spring as preferred.

CULINARY VEGETABLES.

Mr. Browne—Late potatoes are doing finely with this wet weather. Have both Lee's Favorite and Early Ohio, and like the former much the best.

Mr. Crowe—Differs with Mr. Browne. Has always realized best results from Early Ohio. Never use home grown seed. I have tried it and find that it does not pay.

Adjourned to meet at the residence of E. H. Lahee, in Upper Alton, in September, date to be announced later.

At 7 p. m. the doors were thrown open and the young folks joined in a merry dance to the excellent music of Prof. Pierce's string band. At 11:30 the party broke up and all went home with a happy consciousness of having spent a pleasant day.

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SEPTEMBER MEETING.

The Alton-Southern Illinois Horticultural Society met at the residence of Mr. E. H. Lahee, in Upper Alton, on Saturday, September 7th.

The weather was fine; there was a good attendance and the cordial manner in which we were entertained by the genial host and hostess made the day one of the pleasantest that we have spent this year.

Mr. Lahee's is one of the nicest of the many beautiful homes of Upper Alton. The large grounds are studded with shade trees of many varieties, and intersected by fine gravel drives. Wherever one turns, the eye meets some pleasant sight.

Mr. Lahee has one of the finest and best arranged vegetable gardens that I have ever seen. It consists of raised beds in squares of about 10 by 16 feet. Between the beds are paths running in every direction so that one may work and walk about in the garden without stepping on anything. The squares are bordered with blue grass sod. On north side of garden are several terraces of grapes circling in the shape of a half moon.

Meeting called to order at 12:30.

ORCHARDS.

Mr. Davis—We shall have a few poor apples. Market now is very poor for good apples, and cider apples it does not pay to handle. The cider establishments in Alton are paying seven cents per bushel.

Col. Miles—Has a lot of poor apples that are falling very badly. Has turned the hogs into orchard; thinks this the best market he can get.

Mr. Armstrong—When is the best time to set out young peach trees?

Mr. Davis—About the first of November, just before the ground freezes up, is the best time. It may also be done in the spring, but fall planting is the best as the ground is always in better condition, and will pack well around the roots during the winter.

Mr. Pearson—When may winter apples be picked to keep well? I have some nice Winesaps that are full now, but at present rate of falling they will be all on the ground by Oct. 1.

Mr. Riehl—I think apples might be picked now and would keep all right, but ought to be left on until Oct. 1. Apples that are falling now will not keep well. I want also to say here that I have grown about every variety of quince that has been sent out and have found nothing so good as the old Orange, provided you can get it true. The season is about past now and we have had part of a crop of peaches. Would it not be well now for us to consider what varieties have paid us best?

In the discussion which followed: Oldmixon, Stump the World and Smock seemed to be the universal favorites. These are about the only kinds that have paid well this year. The crop generally has been much short of what the spring promised. Fruit generally badly affected by insects, and the very frequent rains have caused much rot. If by any chance, peaches should escape being killed this winter, we must be prepared with our curculio catchers for a vigorous siege against the bugs next spring.

Mr. Rhiel—Likes Van Zant Cling very much. It bears full and is a fine peach. It can only be got of the Stark nurseries at Louisiana, Mo. Piquet's Late is a fine late free and promises well. Salway, ripening a little after Smock, is another good free.

Mr. Davis—Showed and very highly recommended a new seedling. Thinks it is a seedling of the Stump; much like it, a little handsomer, a little larger and a little more acid flavor. Thinks it an improvement on the Stump.

Mr. Riehl—If I were to plant another peach orchard I would plant largely of clings. They grow better, handle better, ship better and are better in every way. They sell just about as well as frees if of good size. Clings are always better flavored than frees, and after people learn how to get them off the stones they prefer them.

VINEYARDS.

Mr. Browne—I am perfectly satisfied with the results of the year's experiments in spraying. In some places where I did not think it so important and did not follow up the spraying as closely as generally, the rot was worse. Feel sure that if spraying is properly done it is a perfect remedy. It is a very disagreeable job, though, and if not very carefully handled the lime is liable to take the fungus off the man as well as vines.

SMALL FRUITS.

Mr. Riehl—Do not mulch strawberries until the ground freezes so that you can drive on the patch with wagons. We need not mulch here to prevent winter killing, as it does not get cold enough to hurt berries. Our mulching is done to keep the berries clean and to keep the moisture in the ground when the crop is ripening. Our soil does not heave enough to make it necessary to mulch early for this.

VEGETABLES.

Mr. Pearson—If the weather stays wet potatoes must be dug soon, or they will commence growing. As long as the soil is dry at the bottom of hill, there is no danger. If we wish to get any late cabbage this year we must fight the worms; they are unusually bad this year.

Mr. Riehl---People need never be bothered with these pests if they would only use a little Paris Green. I wish to state distinctly that there is no danger whatever in using it. The cabbage always grows from the inside and the leaves with which the poison comes in contact will all fall off. Besides there is a sort of oil on the cabbage leaf and with the least rain or even a heavy dew, the water will collect in drops and roll off taking the poison with it. The work of destruction for the bugs is done in a few hours. If put on in the morning one day is sufficient. I have used it for years and we are all alive yet. Also when the slugs get on my rose leaves, I use a little Paris Green and this puts an end to the slugs. It is an efficient remedy for all such pests. For little things like these I prefer to use it dry with plaster or lime.

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JANUARY MEETING, 1890.

The Alton-Southern Illinois Horticultural Society met at the store of Mr. A. L. Floss on Saturday, Jan. 4th.

ORCHARDS.

Mr. Pearson opened the discussion on Orchards by stating that the buds on almost all kinds of fruit trees were swelling, owing to the extremely warm weather of the past month. All fruit is in a very critical condition. It is now so far forward that should we get a snap of only reasonably cold weather all buds would be destroyed. The only hope now for a crop next year is that it will turn moderately cold and stay so for a month or two.

Mr. Riehl reported pansies, sweet violets and Pyrus Japonica in bloom.

Mr. Pearson asked why it is that the apple growers of Southern Illinois receive so much better prices for their fruit than we do for ours. They sold all their crop this year for an average of

$1.25 per barrel on the trees, while we were glad to get 75 cents for ours packed and delivered in town. Is this because their apples are so much better than ours, or because they have their reputation better established than we?

Mr. Riehl—This is owing partly to the fact that our apples are *not* as good as theirs, and partly because we haven't got them in such quantities as they have in Southern Illinois. We grow too many kinds of fruit and cannot give apples the attention which is required to ward off the attacks of curculios. And nowhere in this vicinity are there enough apples grown to pay buyers to build packing houses and engage in handling them. Down there they grow them by the hundreds of acres, and the Eastern fruit dealers know that they can go there and get all they want.

Mr. Pearson—It is a fact that buyers in St. Louis will not touch apples that are brought in there on the steamer Spread Eagle; these apples all come from this section and buyers say they are not good.

Mr. Connor—It is true that the apples grown here are not good. All who have been buyers here know this, and many of them have ceased handling them as it don't pay. There are yet a good many apples grown about Upper Alton, and Mr. Ed. Rodgers, who handles them, is about the only man hereabouts who is making any money out of apples, but he has to sell cheap and buy accordingly.

Mr. Riehl—There has been a great deal of talk about the Keifer Pear, and it is generally condemned as a very poor fruit for quality, and consequently for market, being only good for canning, but I am not ready to grant this. This pear has a tendency to overbear, and then the quality is apt to be poor, but when thinned so the pears become of good size and properly house-ripened, it is a very good pear. Its season of ripening is very much in its favor, as it ripens when the varieties usually grown have entirely disappeared from the market. These qualities are bound to make it a good pear for market. Wish I had 1,000 trees in bearing.

J. M. Pearson—I, too, had some very nice Keifers grown on young trees. I tried to sell them early in the fall, but when people learned of what variety they were, they did not want them

(another instance of what slander can do). I put them away in the cellar, and when well ripened, I put some in my pocket, and gave them to friends here in town, and they ate them, core and all, calling them very good pears.

The Treasurer, Mr. S. F. Connor, read the following report:

TREASURER'S REPORT FOR 1889.

To January 1st, 1889, amount on hand		$ 73 90
To surplus of subscriptions to December meeting of State Horticultural Society		2 80
To dues collected		11 50
To sales of fruit and flowers		15 20
To State Horticultural Society		50 00
		$153 40
CR.		
By premiums	$47 35	
By dishes	10 90	
By F. C. Riehl, order	7 00	
Printing	2 75	
		68 00
To balance on hand		$ 85 40

The Society then proceeded to the election of officers for the year 1890, with the following result:

President---E. A. Riehl, Alton.

First Vice-President---Wm. Jackson, Godfrey.

Second Vice-President---J. G. Vaughan, Odin.

Secretary---J. S. Browne, Alton.

Treasurer---S. F. Connor, Alton.

Librarian---H. G. M'Pike, Alton.

Chairmen of standing committees were chosen as follows:

Orchards---Jas. Davis, Godfrey.

Vineyards---J. S. Browne, Alton.

Vegetables---J. M. Pearson, Godfrey.

Small Fruits---Wm. Jackson, Godfrey.

Ornamental Planting---H. G. M'Pike, Alton.

Committee to Procure Places of Meeting and Prepare Programme for the Year---J. S. Browne, E. A. Riehl and Dr. E. C. James, of Upper Alton.

The sum of one dollar was voted to the Secretary for each meeting he reports.

TRANSACTIONS

OF THE

SIXTEENTH ANNUAL MEETING

OF THE

HORTICULTURAL SOCIETY OF CENTRAL ILLINOIS,

HELD IN

NORMAL, MAY 15 AND 16, 1889.

REPORTED BY

A. C. HAMMOND, Secretary.

OFFICERS FOR 1890.

President, - - - - - F. I. Mann, Gilman.
First Vice-President, - - H. L. Doan, Jacksonville.
Second Vice-President, - G. W. E. Cook, Lacon.
Third Vice-President, - - Miss Lucy Gaston, Lacon.
Secretary, - - - - - A. C. Hammond, Warsaw.
Assistant Secretary, - - - Miss Besssie M. Nash, Warsaw.
Treasurer, - - - - - W. H. Schureman, Normal.

NEXT ANNUAL MEETING AT LACON IN MAY OR JUNE.

List of Members for 1889-90.

Augustine, H	Normal.
Bryant, A	Princeton.
Beeby, J. C	Girard.
Browne, J. S	Alton.
Burrill, Prof. T. J	Champaign.
Cook, G. W. E	Lacon.
Dennis, C. N	Hamilton.
Doan, H. L	Jacksonville.
Dunlap, H. M	Savoy.
Dunlap, R. L	Savoy.
Forbes, Prof. S. A	Champaign.
Gaston, Miss Lucy	Lacon.
Gaston, A. H	Lacon.
Gray, D. H	Elmwood.
Green, Miss Julia	Lacon.
Hammond, A. C	Warsaw.
Jackson, Wm	Godfrey.
Mann, F. I	Gilman.
McCleur, G. W	Champaign.
Minier, Geo. W	Minier.
Nash, Miss B. M	Warsaw.
Packard, A	Bloomington.
Swarts, D. H	London Mills.
Schroder, D. H	Bloomington.
Schureman, W. H	Normal.
Vickroy, H. K	Normal.

PROCEEDINGS

OF THE

SIXTEENTH ANNUAL MEETING

OF THE

Horticultural Society of Central Illinois.

WEDNESDAY, A. M., AUGUST 15.

THE Sixteenth Annual Meeting of the Horticultural Society of Central Illinois convened in the parlors of the Presbyterian church in the city of Normal.

President Dennis called the meeting to order, and invited Rev. T. N. McVetey to invoke the divine blessing.

Dr. E. C. Hewitt, of the Normal University, welcomed the Society to the beautiful city of Normal, in his usual eloquent and forcible style, but as the address has not been furnished the Secretary, only the following brief and imperfect synopsis can be given:

ADDRESS OF WELCOME.

BY DR. E. C. HEWITT, NORMAL.

Mr. President and Gentlemen of the Horticultural Society of Central Illinois:

I take pleasure in offering you these words of welcome to-day, and assure you that the people of Normal are glad to see you, and will deem it a pleasure to show you our public institutions, our extensive nurseries, and fine stock of various kinds.

I feel that it is not entirely inappropriate for me to address you, for I do not look upon you as strangers. Years ago the State Society met here a number of times. Then we numbered among our citizens such men as Phœnix, Fell and Overman, honored names which are no longer with us, but whose work and influence will long remain.

I came from a portion of the country where trees were considered enemies, and the great question was how to destroy them, but even there, there has been a change of sentiment, and they are beginning to understand the importance of preserving them.

Without trees, fruits and flowers, this world would, indeed, be a vale of tears, and life scarcely worth the living. Our farmers have been very negligent in this particular, but they will yet learn that there is profit in them, and that where fruit is largely used as an article of diet, the bills for pills and quinine are greatly reduced.

Horticulturists are, as a rule, intelligent, educated men, always interested in educational questions. We, therefore, hope to see you at the University, and I cordially invite you to visit us before you return to your homes.

RESPONSE BY PRESIDENT DENNIS.

Several other points desired this meeting, and the question may be asked, Why was Normal selected? First, we knew that we should receive a cordial welcome, and, second, that the influences that have gone out from this University will have prepared the way for an interesting and profitable meeting. If, as the Doctor remarked, "brevity is the soul of wit," I will be even more witty than he, and we will proceed with the programme.

SECRETARY'S REPORT.

BY A. C. HAMMOND, WARSAW.

Few persons comprehend the immense quantity and the great value of the horticultural products of our State. Our orchards annually yield millions of bushels of apples; the berry plantations are so extensive that special trains run to accommodate the business; the rich fruitage of ten thousand vineyards is found in every western market, while the products of unnumbered fruit and vegetable gardens add to the luxuries of the farmers' homes and the estimate of $10,000,000 as the annual value of these products, sold and consumed at home, in the entire State, and $3,500,000 in Central Illinois, I think a very reasonable one.

We, therefore, see that the value of our horticultural products is enormous. But aside from this question of dollars and cents there are questions of the highest importance connected with fruit growing, forestry, gardening and ornamental planting.

That every farm in Central Illinois should be surrounded with these evidences of refinement, an orchard, garden, lawn, groves and ornamental trees, all will admit. Why then do we so often find them wanting? Why is the orchard going to decay, and no effort made to renew it? Why is the garden neglected, and the grounds about the house uncared for, untidy and repulsive?

Why are so many farmers' tables bare of refreshing fruits and health-giving vegetables? Why is fruit culture, vegetable gardening, and ornamental planting so generally neglected by the men who should be specially interested in it? The answer is found in the fact that the great majority of our people consider horticulture a business of little importance and unworthy of attention, when it interferes with their regular farm work. It has also been thought unworthy of the fostering care of the State, and the miserable pittance of $2,000 which is annually being doled out to the State Horticultural Society to advance this great interest in a state of the magnitude of an empire, has been supposed to be all that was necessary. The remedy is education. And here the importance of horticultural societies, state, district and local, becomes apparent.

Were it necessary to prove this proposition, I would refer you to the two best known and most successful local societies in the west, those of Alton and Warsaw, and the influence they have had, not only on the communities where they have done their active work, which are noted for their horticultural products, and handsome, tasty homes, but upon the horticultural interests of the entire west. It was my good fortune to attend one of the meetings of the Marshall County Horticultural Society, last February, probably the youngest in the state, and I found an intelligent and cultured gathering, including a goodly number of young people. They were exceedingly enthusiastic and earnestly seeking for horticultural knowledge. It is safe to predict for this society a bright future, and that in a few years we will find better orchards, better fruit and vegetable gardens, more handsome lawns and pleasant homes, more groves and shelter belts, more attractive school grounds, and more intelligent, contented and happy young people in that community than where these educational influences do not exist.

I have made this allusion to show what can and should be done in every county in the state, and is it not the duty of the various districts, as well as the State Society, to use their influence to encourage the organization of local societies?

Arbor Day is another educational influence of no mean order. The State Horticultural Society and the educational department of the state have taken a lively interest in this work, and it is a pleasure to know that during the two years Arbor Day has been celebrated a marked improvement has been made in the surroundings of the school houses and rural homes of Central Illinois. This is as it should be, but the work is just begun and must be prosecuted year after year. The time may come when a sufficient number of trees may have been planted, but every returning Arbor Day will suggest the necessity of a general clearing up and ornamentation of the grounds about the school house, church and home.

Our work is not a selfish one, for all will admit that the safety and mainstays of our republic are our schools, churches and farmers' homes. It is therefore our duty as good citizens and lovers of humanity, to bring them up to the highest point of usefulness and make our country schools and churches and especially our rural homes, so pleasant and enjoyable that the boys and girls and young men and maidens will be unwilling to leave them for the allurements of the city.

We have no disposition to underrate the value of the cities. The spirit of enterprise they show is commendable in the highest degree, and some of the noblest men that have blessed our nation were residents of the great cities, yet it is a sad, but undeniable fact that in the great city of the west, the 4,000 byways to hell, known as saloons, can control more votes than all its educational and religious institutions combined.

How important then that the rural districts rear up a generation of earnest, honest, cultured men, who will hold in check this vast army of intemperate, ignorant and often vicious men, who would gladly undermine the very foundations of society and launch our government upon the strong sea of anarchy and confusion.

In the palmy days of the Roman empire, when nearly every citizen was a land owner, and a majority of the people were dwellers in the country, every man "was a patriot," the government was stable and the people contented and happy, but with increasing wealth they became luxuriant and effeminate, rural life became distasteful, the rural homes were exchanged for the more exciting life of the city, public men became corrupt, social life impure, and the end we all know.

If history does not "repeat itself" in the new western world, it will be because our country homes keep pace with the advance of taste and esthetic culture, and our rural people are intelligent, prosperous and happy.

But it may be asked what can the Horticultural Society of Central Illinois do to advance this desirable end? Much, every way. First, as already referred to by aiding in the organization of local societies, and encouraging and instructing in tree planting, especially on Arbor Day. Also by its members giving active encouragement and support to the farmers' institutes that are annually held in almost every county and district in the state. These meetings may be made a power for good, and if properly conducted, many a plodding farmer will be made to see that he is wasting his opportunities and be persuaded to make a "new departure" by adopting improved methods of culture, improving his stock and adding to the comforts of his home; and many a young man will be enthused with an ambition that will urge him onward and upward till he should gain a noble place among the world's great workers.

We should be able to devise some means to increase the attendance and interest at our Annual Meetings. At some of our Meetings within the last five years we have had an attendance of five or six hundred, at others scarcely a tenth of this number. This seems to indicate that the local interest and attendance will be very good in some places and in others quite unsatisfactory. Hence the necessity for care in the selection of place of meeting.

REPORT OF TREASURER.

F. C. HEINL, JACKSONVILLE.

RECEIPTS.

By cash from Lyman Hall	$ 37 70	
" " " H. K. Vickroy	50 00	
By fourteen membership fees	14 00	
	$101 70	
		$101 70

DISBURSEMENTS.

Miss Bessie Nash	$ 20 00	
A. C. Hammond	12 85	
H. M. Dunlap	2 25	
Lyman Hall	3 94	
Phil. Dallam	6 75	
	$45 79	
		$45 79
Balance in hand of Treasurer		$55 91

CHERRY GROWING.

BY A. H. GASTON, LACON.

In the flora of America the cherry tree occupies an important place.

There are several distinct species of the cherry family. The Wild Black and the Wild Red Cherries are forest trees; they grow large and the timber is valuable for inside finishing and cabinet making purposes. The fruit is of no special value except for food for birds. The stocks of these two varieties, especially the Red Cherry, are valuable for grafting or budding our Dukes and Morellos on, as the stocks always remain larger than the grafts or buds. They are a great improvement on the little old Dwarf Mahaleb stocks which are short lived and ought not to be used for propagating purposes. The wild cherry pits are easily gathered and can be planted in the fall [or spring.

With good care they will grow large enough to bud like peach trees the first summer. The next spring they can be cut off and the growth thrown into the buds. With good care and a favorable season, the growth will be from three to five feet, or large enough to set out at one year old and they can be grown at a trifling cost. These two varieties of wild cherry trees do not sprout at the roots.

The peach, plum and apricot being of the same affinity, it is possible that they might all be budded on the wild cherry stocks and be an improvement on our present system of propagation.

Our experience and observation have been that the Early Richmond and English Morello are the two most valuable of the sprouting or Morello family, and they grow much larger and are longer-lived and bear better on the wild cherry stock than on the Mahaleb.

The Duke family of cherry trees has several members in it. The Governor Wood and Yellow Spanish are sweet and good and they do not sucker, but are not hardy enough to stand the rigors of this climate. The sprouting Black Morello is not worthy of further cultivation.

The Early Richmond or English Morello on their own roots are much longer-lived and bear better than when grafted on the Morello or Mahaleb stocks. The Early Richmond and English Morello should be grown largely for commercial purposes. When canned or dried they can be shipped to the four quarters of the earth. We ought to raise more fruit of all kinds so as to supply the home demand and have a surplus to ship to foreign countries. The balance of trade has been against us for some time and we are growing poorer each year. If we go into fruit growing of all kinds on a large scale so as to supply foreign countries the balance of trade will turn in our favor and we will grow richer and more prosperous, besides giving employment to the idlers and tramps of our nation.

DISCUSSION.

Dr. Schroeder—Two cherries, the Montmorency and the Ostheimer, that have lately been added to our list are very valuable. The Montmorency is twice as large as the Early Richmond and endures our winters well. The Ostheimer is of German origin, but was taken to Russia many year ago and brought to this country by the Mennonites. It is perfectly hardy, does not sprout, and may be considered a valuable fruit.

Mr. Augustine—Has any one tried the Wild Cherry as a stock? I have found it almost impossible to make the seed grow. It is also difficult to bud and transplant. The Mazzard is tender, the

Morrello sprouts, I have therefore concluded that the Mahaleb is the only satisfactory stock.

NEW AND OLD INSECTS.

BY PROF. S. A. FORBES, CHAMPAIGN.

The American Plum Borer.—*Euzoph era semifuneralis*, Walk. —(*Stenopty cha pallulella*, Hulst.)—Order, *Lepidoptera*.—Family *Pyralidæ*.

Although various boring insects have occasionally attacked the plum these have been species whose principal injuries are done to other trees, and no distinctive plum borer has hitherto been known in this country. Among these incidental enemies are the peach borer (*San nina exitiosa*), the flat-headed apple tree borer (*Chrysobothris femorata*), the so-called pear-blight beetle (*Xyleboru pyri*) and one of the twig borers (*Ela phidion parallelum*). Somewhat recently a newly imported European bark beetle (*Scolytus rugulosus*) has attacked a variety of fruit trees, the plum among them; but by none of these insects has any constant and serious injury been done in Illinois, so far as I am now aware. In a species first described (in this country) in 1887, and whose immature stages have remained unknown until the present time, we have our first example of a borer devoted, so far as we know, to the plum alone. This species was first reported to me as an injurious insect Aug. 31, 1887, in a letter from Mr. Buckman, Farmingdale, Sangamon county, Illinois, accompanied by a few borers found in young Chinese plum trees (*Prunus Simonii*), one of which was already nearly killed by them. The attack was described as most general near the forks of the tree, especially at the bases of the lower limbs, but the larvæ were sometimes found an inch or less within the earth. The smaller ones were near the surface of the bark, sometimes just under the thin outer film, but others were next the wood. As many as fifty were taken from a single tree, the bark here being killed in large irregular patches.

By the following year it was evident that this was a very destructive species, several trees having been destroyed by it. These were mostly, however, the Chinese plum already mentioned, and eastern varieties, Lombard, Gage and Hulling's Superb; but the Weaver plum, a Western variety, was also injured. Living borers received from Mr. Buckman Nov. 3 were about half an inch in length, of a greenish dusky color, with only a few scattered stiff hairs springing from small dark specks. The head was reddish brown, with a darker triangular patch in the middle, and the top of the segment behind the head—the cervical shield, so called—varied from yellowish to pitchy, more or less shaded with brown, but with a median yellow patch. This borer has, of course, the

three pairs of legs and the fleshy prolegs (ten in number) of a caterpillar. From the peach borer, whose structure is similar, it may be distinguished by its dusky color (the other being white), its smaller size when full grown, and with a glass, by the hooks on the prolegs. In the peach borer the ends of the soft, stump-like prolegs are provided with small brown hooks arranged in two opposite curves, discontinuous at their ends, each of a single row; while in the new plum borer the corresponding hooks form a complete ring, nearly covering the end of the leg.

Kept in a breeding cage and supplied with chips and twigs of plum-trees, our larvæ spun small webs in which they passed the winter. By May 3 a part of them had pupated; and May 28 and May 29 two winged moths emerged, all the others failing.

These moths were small gray insects, the extended wings measuring about eight-tenths of an inch. (The fore wings were reddish behind (within), each with a large blackish gray patch just beyond the middle. The hind wings were plain).

Other moths of this species were taken several times at the electric light in 1886, 1887 and 1888, the dates of their occurrence ranging from May 5 to August 24. The greater part, however, were collected in May and June,—and this is doubtless the period of the greatest prevalence of the winged form. The time and place of oviposition are unknown.

In brief, the species is apparently single-brooded; passes the winter as a larva in the tree, pupates in May; emerges in May and June, and may continue to lay its eggs through July and August.

Numerous experiments with insecticides for the destruction of the larvæ and the eggs are reported by Mr. Beckman, but all without encouraging results. Unless the period of oviposition is so long as to make preventive measures impracticable, it is probable that the washes of soap, soda, carbolic acid and the like, which protect the apple tree against the common borers, may be used to advantage on the plum in summer as a defence against this new enemy.*

DESCRIPTION.

Larva—The general appearance of this larva is that of a dusky, somewhat hairy caterpillar, paler beneath, with reddish brown head, darker in the middle, and a paler, variegated cervical shield.

Principal hairs conspicuously long and slender. The head is brown, with a lateral black blotch behind the eyes, smooth, much darker on the slightly depressed frontal area, this bordered by depressed black sutures, outside which, at a little distance, is a

* I have found mention of the larval habits of only two other species of the genus (both exotic), one (E. cinerosella) living on wormwood (Artemisia) in Europe, and the other (E. zellerella) bred from dates.

V-shaped fine white line. Antennae three-jointed: first joint very large, broadly conical; second thick oval, with a very long, stout hair at outer side of tip; the third minute. Ocelli five, black, placed behind the antennae, in a curve opening downward.

Labrum broadly emarginate, with rounded lobes. Maxillæ and labium pale beneath, with dark sutures, strongly contrasting with adjacent parts of head. Mala and palpi brown. Labial palpi minute. Maxillary palpi three-jointed, large; first joint nearly as thick as the palpiger, and about as broad as long; second joint cylindrical, width two-thirds the length; third joint tapering, about two-thirds as long as the second.

Body with six conspicuous rows of long, pale hairs, longest on the posterior segments, one hair of each row to each segment, each borne on a minute black piliferous tubercle scarcely as large as the spiracle. One row above spiracles, another equally distant below, and two subdorsal rows. Other smaller hairs irregularly distributed.

Cervical shield yellow, smooth, with a few scattered hairs and two curved brown blotches, one on each side, separated by a yellow median spot. Anal plate coriaceous, brown, heart-shaped, with six long stout hairs at its posterior margin. Posterior segments without spines or tubercles at hinder margin, differing here from the peach borer. Spiracles black, nearly circular, anterior pair but little larger than the remaining eight, last pair not exceeding the eighth in size.

Thoracic legs pale reddish brown externally, paler within, with dusky tips. Each proleg except the last pair with a complete close circlet of large hooks, and several smaller ones besides, and also a horny black central disk or tubercle within the ring. Last pair with a single half circlet of very strong, close-set hooks.

Imago—Expanse 20 to 25 mm. Head and thorax dusky gray, with bright bronze reflections. Abdomen similar, and also brightly bronzed, but with edges of segments pale. Fore wings light gray with brownish red and black markings. Posterior two-thirds of basil field brownish red with scattered reddish scales along the costa also, the reddish tint deepest along the middle of the wing. Basal line near the middle of the wing, white, sometimes obsolete posteriorly, making, when complete, two external, and three internal angles. Middle field black mixed with gray, except at posterior margin, where it is largely suffused with reddish brown. White scales usually forming distinct discal spot, in one case broadly ringed with black. Outer line variable, when distinct with two internal and one external angles. Commonly distinctly bordered with black within, and followed without by a reddish shade (except near costa, where this merges in black) which is broadly bordered by light gray. A marginal black line,

commonly broken by the veins. Fringe dusky, with white line at base. Hind wings smoky, with black marginal line and dusky veins, and fringe with white basal line followed by a dusky band, beyond which it is paler. Surface of hind wings considerably bronzed, the fore wings less so. Beneath wings fuscous bronzed. Outer field of fore wings somewhat paler; hind wings gradually darkening outward.

Antennæ dark; proboscis gray; palpi dusky bronzed.

Described from twelve Illinois specimens.

Distribution—Columbia, S. A., (Zeller), Florida, Texas, Illinois, Colorado, Utah, Washington, pretty general throughout the eastern United States and Canada. (Hulst).

LITERATURE.

The species was first described in 1863 as *Nephopteryx semi funeralis* by Walker in the British Museum Catalogue, Part 27, p. 58; and again in 1882 according to a note kindly sent me by Mr. Hulst, as *Euzophera impletella*, Zeller,* this description being based on specimens from Columbia, S. A. In this country it was described by Hulst in 1887 in *Entomologica Americana* (vol. III, p. 137) as *Stenoptycha pallulella*.

The original description of the genus was given by Heinemann under the name Stenoptycha, in 1865, in his work on the Lepidoptera of Germany and Switzerland§, but as this generic name was pre-occupied by Zeller†, the genus was re-christened Melia by Heinemann, on a later page of the same work‡. Melia proved however, also to be pre-occupied¶, as noted by Zeller in 1867, and the current Euzophera was then finally proposed.

THE FRUIT BARK BEETLE.

Scolytus rugulosus, Rtzb; order, *Coleoptera;* family, *Scolylidæ*. It is now quite generally understood that Columbus was not the only European discoverer of America, certain Icelanders and Norwegians, at any rate, having found our shores before his time. The entomologist, also, knows that this continent has been many times discovered since by adventurers from the Old World, none of them aware of the successes of the other; and it is now my duty to report upon one of these insect explorers which has recently found its way across the sea, and has also discovered by experiment that the plum, peach, pear and apple

*Hort. Soc. Ent. Ross., Vol. XVI, (1882) page 234.

§Die Schmetterlinge Deutschlands und der Schweiz, page 190 (1865).

†Stett. Ent. Zeit., 1863, page 154. Zeller's use of this name for a genus of Pterophoridæ is also illegitimate, as it has already been applied by Agassiz to a Medusa. (Contr. N. H. Amer, Vol. II, page 149. 1862.)

‡1 c. p. 209.

¶Used previously in Muscidæ, Pyralidæ, Crustacea, Mollusca and botany.

trees of the New World are not less healthful and delightful food than those of its native home. This modern Columbus made its advent here so modestly, and with so little disturbance to those it found already in possession, that its very presence was not observed until it had spread, quite gradually, along our eastern border.

It was first reported in America eleven years ago from Elmira, New York, where it had begun operations as a peach bark beetle; and in 1880 it was again mentioned as from Fair Haven, New Jersey, where it had for several years destroyed all the cherry, peach and plum trees set out on a particular lot. It was also noticed at about the same time in Coopersburg, Pennsylvania, and in the District of Columbia, as a cherry pest. In Maryland it had attacked the peach, and last year its work on the apple in Virginia was reported by Dr. Lintner, State Entomologist of New York. I can find no published mention of its occurrence west of these tide-water States.

In Illinois it was first detected by us in June, 1888, at Albion, in Edwards county, burrowing the twigs of cherry trees; and next it came to us from Villa Ridge, Pulaski county, where Mr. Geo. W. Endicott had noticed it in the trunks and larger branches of the Chickasaw Plum. In the Old World, besides the trees mentioned, it has been found injurious to the quince.

The method of its injury is well shown by the plum branch sent me by Mr. Endicott, the bark of which is profusely perforated with small holes scarcely larger than pin pricks, thickest on the old leaf scars, but about equally distributed elsewhere. The bark is everywhere completely undermined by rather regular galleries made by the female beetle, which excavates the bark for the deposit of her eggs, and continued by the larvæ, which live upon the inner layers of the bark and the outer parts of the sap wood.

According to the European accounts of its life history, the adult beetle emerges from the tree and begins to lay its eggs in May, and the female, penetrating the bark and mining beneath it, lays eggs to right and left as she goes. The young larvæ, as they hatch, move out in parallel lines, completely deadening the bark as far as their work extends. Observations in this country throw some doubt upon this life history, and make it seem probable that there are two broods, the beetles emerging in early spring, but upon this point I am not yet prepared to report.

The adults have wings, but seem not to use them freely, since the local spread of the species has been very slow so far as noticed. Our breeding cage observations go to show that the beetle often re-enters the same branch from which it has just emerged, though this may be thoroughly dead and dry.

The number of kinds of fruit trees which it may destroy, and the thorough-going character of its work, make this an insect well worth watching; and the fact that it distributes its attack

over the entire tree, from the main trunk to the smaller twigs, makes it probably impossible to reach it by washes or to dislodge it by hand, or, indeed, to save a tree which is once infested by it. Prompt destruction of all such trees, so as to destroy the insect with them, seems the only measure worth discussing Unquestionably, whatever the details of the life history may prove to be, infested trees cut up and burned in winter will contain the beetle in some one or more of its stages.

ARSENICAL POISONS FOR THE PLUM AND PEACH CURCULIO.

The following report of results of my recent experimental work on the common peach curculio is intended to correct and complete a reporter's summary of remarks made in August, 1888, at a meeting of the Central Illinois Horticultural Society, at Champaign, as republished in the last report of the U. S. Entomologist, page 75. The experiments there alluded to were not generalized by me, but were described as merely preliminary to a much more elaborate series which I have since carried through.

The object of these experiments has been to ascertain some details of the food and feeding habits of the curculio, and to test its sensibility to arsenic poisons when distributed on the trees which the insect frequents. In the case of the peach, it was important also to find what amount of these poisons the leaves might receive without marked injury.

FEEDING EXPERIMENTS.

June 15, 1888, plum curculios confined with plum leaves. June 16, one observed making a deep, sharp, oblong excavation in the midrib; similar work on other midribs, petioles and stems. Beetles, also seen gnawing the surfaces of the leaves, especially the fresher terminal ones. Leaves removed, and green plums substituted. June 19, plums peppered with holes, some containing eggs, others not. July 2, fresh lot of beetles imprisoned with both leaves and green plums. The next day both had been eaten, the plums perhaps the more freely.

Several examples taken April 14, 1889, before peach trees were in bloom, were proven by dissection to have last fed on dead vegetation, as shown by the absence of chlorophyl and the presence of some of the fungi of decomposition. Curculios confined April 19, with both dead and living peach leaves, fed only on the latter, not having touched the dead leaves at the end of three days. Peach blossoms being placed in the cage, with fresh leaves also, April 22, both were freely eaten at once, the blossoms being, however, evidently preferred. Both calyx and

corolla were perforated with small round holes, and eaten away from the edge.

Three specimens taken in Southern Illinois were dissected April 23, and found to contain vegetable tissues, chiefly of leaves (as shown by the fragments of spiral vessels), without fungi, and with more or less chloryphyl. Vegetable hairs and peculiar pollen grains, not those of fruit blossoms, were also recognized.

Thinking it possible that the curculio might feed on flowers somewhat indiscriminately, we put a number under a bell glass with roses in full bloom. The next day, May 19, the petals were much eaten, and two days later, calyx and peduncles had likewise been attacked. The rose leaves were not injured. When rose blooms and peach leaves together were offered the imprisoned beetles, they fed freely on both.

Again, May 23, curculios were confined with both bush honeysuckles and snowballs in blossom. The next day the honeysuckle blossoms were eaten, and on the second day those of the snowball also. On the other hand, beetles shut up with peach leaves and peony flowers, ate the peach at once, as usual, but refused the peony entirely, not having eaten it at all after ten days.

INSECTICIDE EXPERIMENTS.

My first experience with insecticides for the curculio alone were made July 6, 1888. Two lots were placed under glass, with leaves and green fruit of the plum, the food of one being sprayed with Paris Green, one pound to fifty gallons of water, and the other not. The first beetle died in the poisoned lot July 9, and the next day all were dead, the check lot continuing without loss. July 28 a similar experiment was made with Paris Green, one pound to one hundred gallons, applied until the leaves began to drip. The poisoned beetles commenced to die the next day, and five of the six were dead on the 31st. In the check lot of six, on the other hand, only one was dead.

An experiment begun with one pound to 200 gallons was unavoidably suspended in two days, before results were reached.

Next, April 19, 1889, a lot of curculios, greatly exhausted by long confinement in transit, were divided into five lots—the first, of twenty-four, a check; the second and third, of twelve each, the fourth, of nine, and the fifth of twelve. The food of the second lot was treated with Paris Green mixed with water at a rate of one pound to one hundred gallons; that of the third, with a pound to 200 gallons; the fourth, a pound to 300, and the fifth, a pound to 500 gallons.

The previous hardships of the check lot caused many of them to die, most of them having been insensible, in fact, when

first released; but the effects of the poisons were nevertheless evident, as shown by the subjoined table:

Paris Green Experiment No. 1, April 19, 1889.

Died.	Check lot.	1 lb. to 100 gals.	1 lb. to 200 gals.	1 lb. to 300 gals.	1 lb to 500 gals.
	Number used, 24.	Number used, 12.	Number used, 12.	Number used, 9.	Number used, 12.
Apl. 22		3	3	1	2
23	2	2		2	3
24	1	2	3	2	1
25		2	4	2	3
26	3	1	2		1
27	2	2		1	1
29	2			1	1
					1
Total..	10	12	12	9	12

May 4, this experiment was repeated with a fresher lot of beetles, with more marked results, curculios commencing to die two days after treatment in all the poisoned lots but one, all of one lot being dead in nine days, and in ten days, all of every poisoned lot but a single beetle. In the check lot, meanwhile, only one had died.

Paris Green Experiment No. 2, May 4, 1889.

Died.	Check lot.	1 lb. to 100 gals.	1 lb. to 200 gals.	1 lb. to 300 gals.	1 lb. to 500 gals.
	Number used 12.	Number used 12.	Number used 12.	Number used 22.	Number used 22.
May 6..		3	2		1
" 7..		1		4	2
" 8..		1	2	2	1
" 9..		2	3	3	3
" 10..	1	3	1	4	4
" 11..		1		6	4
" 13..			4	2	5
" 14..		1		1	1
Total....	1	12	12	22	21

In both the above experiments, as also in the following, peach leaves were used as food, and these were sprayed but once.

All strengths of the poison mixture here killed the beetles feeding on it, the difference being seen in the rapidity with which they took effect. In four days from poisoning, the ratios killed were forty-two per cent. in lot two, thirty-three per cent. in lot

three, twenty-seven per cent. in lot four, and eighteen per cent. in lot five.

Finally, May 17, a still more extensive experiment was begun with London Purple, 347 curculios being divided into five lots, as before, their treatment differing from that of the foregoing only in the substitution of London Purple for Paris Green. The results were rendered, however, somewhat less satisfactory by the lateness of the season, which probably accounts for the number of deaths in the check. Other parallel observations led to the conclusion that spent adults, doubtless the earliest to emerge, were already beginning to die spontaneously. The experiment was continued for eight days, when all the curculios of the first lot were dead, and nearly all of the other poisoned lots, a fourth of the check having also perished.

London Purple Experiment, May 17, 1889.

Died.	Check lot.	1lb. to 100 gals.	1 lb. to 200 gals.	1 lb. to 300 gals.	1 lb to 500 gals.
	Number used, 47.	Number used 100.	Number used 100.	Number used 50.	Number used 50.
May 19..	.....	35	37	16	12
" 20..	.....	18	19	4	6
" 21..	1	18	10	2	4
" 22..	.....	10	11	9	10
" 23..	5	5	7	7	8
" 24..	4	6	5	3	5
Total....	10	92	89	41	45

EFFECT ON THE FOLIAGE.

It is well known to fruit growers that the leaves of the peach are much more sensitive to the scorching effect of the arsenical poisons than those of the apple or plum, and it is important to know just how strong a mixture of the common arsenical insecticides that tree will bear under favorable, and also under unfavorable, conditions. My experiments on this point are incomplete, but they are given here for what they are worth:

First, two branches of a peach tree were sprayed, May 18, with London Purple mixtures, a pound to 100 and a pound to 200 gallons, respectively. A week later no noticeable difference could be made out between the condition of the two branches, the tips of the leaves in both being somewhat deadened and dry. May 20 identical applications were made, with no apparent effect on the foliage by May 22. Heavy rains followed, and no further observations were made.

June 6, two other branches were sprayed as before. A heavy rain followed June 8, and more upon the 9th. On the 10th, the

effects of the poison were somewhat apparent on both branches, reddish discolorations occurring where the fluid had gathered in drops, and also along the margins of the younger leaves. Further rains occurred on the 16th and 17th. On the 18th, the discolored spots had increased in size, those on the branch sprayed with the stronger solution being somewhat larger and more numerous. No leaves had fallen, but those worst affected were easily detached, and doubtless would have fallen eventually. This loosening of the leaves was evidently due, not to damage to the petiole, but to premature ripening of the leaf, * consequent on the chemical injury to the blade. June 8, two other branches were sprayed as before, substituting Paris Green for London Purple in both mixtures. Light rain followed the same day, and more on the 9th. On the 10th a scorching of the leaves was somewhat evident, a little more so where the stronger mixture was used, while on the 18th the condition of the foliage was practically the same as on those branches treated with London Purple—if anything, a little less severely injured. There was also a barely perceptible difference in favor of the weaker mixture. Supposing that all the worst injured leaves were rendered practically useless to the tree, the loss of foliage would probably amount to four or five per cent.

There can certainly be no further question of the liability of the curculio to poisoning by very moderate amounts of either London Purple or Paris Green while feeding on the leaves and fruit of peach or plum; but much additional experiment is needed to test the possibility of preventing serious injury to these fruits by this means. The pupal hibernation and late appearance of a considerable per centage of the curculios make it possible that sprayings must be several times repeated, and perhaps carried further into the season than is consistent with safety; and the limit of tolerance of these poisons by the peach under ordinarily trying circumstances has not been clearly ascertained. Further, the observations above reported on the food plants of the curculio make it likely that, in nature, a smaller proportion of the food of these beetles comes from the peach or the plum than has hitherto seemed probable, and that poisons there applied would kill less certainly. It seems worth while to make the attempt to attract the adult to flowering plants in the orchard other than the peach, with the hope of poisoning it there (especially late in the season) without using these dangerous insecticides on fruits afterwards to be eaten.

DISCUSSION.

Dr. Schroeder—I am afraid that there may be danger to the land, connected with the use of arsenical poisons. Is it not pos-

*Ascertained by studying sections of the petiole.

sible that trees and plants may absorb the poison in sufficient quantities to be dangerous?

Prof. Forbes—Prof. McMurtrie mixed arsenic with earth in a flower pot, and grew potatoes in this poisoned earth, but a careful analysis failed to show the least trace of poison.

Mr. Doan—Why do we not find the thrip in our strawberry plantation this year?

Prof. Forbes—We find plenty of them at Champaign.

Dr. Schroeder—Does not the poverty of the soil have something to do with this insect question?

Prof. Forbes—All insects do more injury where the soil is poor.

Mr. Minier—I think that we have learned that a rich soil and careful, thorough cultivation is the best preventative against insect depredations.

On motion of Mr. Schureman, it was decided to fix the hours of meeting at 10 a. m. and 2 and 7:30 p. m.

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AFTERNOON SESSION.

Mr. Hursey—I think that the speakers got the cherry a little mixed this morning. The wild red cherry is probably a valuable stock, but the black is of little value.

Mr. Minier—The wild red cherry is rarely found as far north as this, but I have found it growing in Scott County. If Mr. Gaston has found a stock that will succeed as well as he thinks this will, we owe him a vote of thanks.

Mr. Gaston—Arthur Bryant, Sr., speaks of this cherry as a valuable stock, and we have two at Lacon that are doing well on it. We, therefore, think it the coming stock.

PRESIDENT'S ANNUAL ADDRESS.

BY C. N. DENNIS, HAMILTON.

Another year has rolled around, the time for our annual meeting has arrived and finds me booked for an address. In order to attend the meeting I came from a distance, and was much impressed with the beauty of the country. Looking as far as one could see, the eye was met with field after field of wav-

ing grain, dotted here and there with horses and cattle, orchards and groves, and tasty houses from which children were going to school. And if we could look within I trust we would find books, magazines and music. I could but think, why should any one who has a home in Illinois leave it for Oklahoma or Florida, and I said to myself unless Paradise is on earth one need not leave Illinois to search for Elysian fields.

But let us return to the subject of the meeting. The members of this Society are from New England, Ohio, Indiana and Kentucky, and as a matter of course each one remembers his favorite fruits, and it has taken years to convince them that the trees so good at home could be a failure in Illinois; and thus the first lesson in horticulture in Illinois was to unlearn the lessons learned at home, and when the trees began to succumb they began to cry out that horticulture in Illinois was a failure. The adage that "experience is a dear school," is just as true now as ever, but what remedy can we urge?—Systematic experience with thorough results. The State Board asked for an appropriation and failed, but tried again and with favorable results. The State Board may outline work, but tests must come from producers. The Board must look well to what experiments they undertake. While the State Societies have their work to do, the local Societies also have their part, and in every state why might we not have a monthly report to the State Society? The Grange was a good thing in some ways, but when they turned into bankers and railroad men, they killed the goose that laid the golden egg.

But I am taking up your time, and will close, asking every one to help make this a profitable meeting.

On motion, Mr. Minier, Mr. Browne and Mr. Vickroy were appointed a committee on the President's Address.

EXPERIMENTAL HORTICULTURE.

BY PROF. T. J. BURRILL, CHAMPAIGN.

Horticulture is by no means a modern art, if we use the word in a very general sense, for every nation and people of which history tells have appreciated fruits if not flowers, the edible things of a garden if not the ornamental features of a lawn and of a landscape. Many of the kinds of plants we cultivate were in use at the dawn of history. Of the origin of quite a number of them we are still ignorant, no wild specimens of them having ever been known to civilized man. Onions, and beans, and cabbages, oranges, and apples and grapes had an existence as cultivated plants before letters were invented, and before man as an individual had legal possession of land. There were, too, in the remote past, enthusiasts in the appreciation and admiration of the plants to which we owe the existence of our society and

largely on account of which we assemble to-day. No references in regard to material things occur earlier in ancient history than those concerning the lily and the rose, and no one to-day shows a livelier appreciation of their beauty than some of earth's earliest poets. The Romans upon festive occasions made profuse use of flowers, some of which were brought in ships from distant places to be strewn on the streets before the returning hero from the bloody fields of battle. Cleopatra gave entertainments with the floors of her palaces covered thick with roses. The gardens and olive groves were sacred places when Christ was upon earth, and in the stretch of ages before Noah planted a vineyard, Cain, the first born, became a tiller of the ground.

Yet horticulture, as we know it, is a modern art. Especially is it true in our country that great attention has been paid to it only in the last half century. The men are mostly still living who were pioneers in American horticulture as a business, and one whom we all recognize as the father of landscape and decorative gardening in our country was born in Newburgh, N. Y., in 1815. There was not even a nursery which we would call worthy of being cited before the beginning of the present century.

James Vick began his seed business in 1855, carrying his little papers to the post-office in a basket upon his arm.

Peter Henderson came to the United States in 1840 and wrote his first book in 1866—"Gardening for Profit."

The Ellwanger and Barry partnership—the real beginning of the great nurseries near Rochester, N. Y.,—was formed in 1840.

William Prince's Treatise on Horticulture, published in 1798, is said to be the first upon the general subject printed in America.

The first State Horticultural Society was founded in 1829, and that at the outset for the purpose of purchasing and keeping up Mount Auburn cemetery near Boston.

Hovey's Magazine, the first distinctively horticultural periodical in America, was begun in 1835. Downing's Horticulturist in 1846. The first article in the former is about pears in which twenty-three varieties are named, among them the Bartlett, and of this it is said, "The two trees growing in the garden of E. Bartlett, Esq., Roxbury, from which have originated all the trees in this vicinity were selected in England in 1799. * * * It is very singular that no other person (to my knowledge) has imported and fruited this variety in the country."

In the first volume of Downing's Horticulturist is a critique by H. W. Beecher, on a controversy between Mr. Longworth of Cincinnati and C. M. Hovey of Boston, running from 1842 to 1846 in the magazine of the last named gentleman, upon the question as to whether strawberries were ever sexually distinct, and so whether it was ever worth while to plant two kinds near

each other for the purpose of proper fertilization. The reviewer pronounces strongly in favor of Mr. Longworth and the necessity of planting fertilizers with special (pistillate) kinds.

Without attempting to even summarize the progress that has been made during the last half century in our country in horticultural science and art, it may be asserted that this progress has been exceedingly great. During this time nearly all existing societies and associations like our own have been formed; nearly all horticultural business enterprises of which we know have sprung into existence. Before this time no markets were regularly supplied with horticultural products, and few families thought of buying, except as rare luxuries, fruits for the table or flowers for decorative purposes. The trade in perishable fruits and garden products to-day—this day—is greater than that of the whole country during Washington's administration of eight years. This statement is not based upon actual figures, but is, nevertheless, readily believed. Marvelous advance has been made both in the materials of the art and in the popular appreciation of its products. Ours is a day of intense horticultural activity, such as never before was witnessed in any age or country, if we judge by the number of men and women employed and the total aggregate of sales made. I will not pronounce so confidently upon having so much more love for and interest in the work for its own sake, so much better and fuller recognition of the beauties and charms connected therewith, than had our fathers and mothers a generation ago, or even than had the ancients when architecture was young and when the trades of the tailor and dress-maker were unknown. We certainly are not devoid of a sense of the luscious savor of fruit nor of the sweet fragrance of flowers. Happy they who confine profitable business and a high taste for the pure and beautiful in the daily association with trees, and vines, and herbs and flowers—Nature's bounties and benedictions, art's treasures and triumphs.

The interests and delights in horticulture being thus universal with man in time and space, during all time and in every land, the art being old as well as new, but new emphatically in the extent of its practice, and especially in our country new in a business way, with every indication of wide and great increase in the amount of financial transactions connected therewith, coupled with the rapidly increasing ability of our people to pay for the gratification of taste and the indulgence in luxuries, and above all the growing habit of all classes and grades of Americans to make daily use of the products of the fruit plantations, gardens and greenhouses, all serve to impress upon our minds the unmeasured importance of experiments and investigations tending to improve in every feasible way the practice and materials of the high-born art and new-born business. Progress indeed has been made in the past, but when we review the

methods by which this has been mostly accomplished, and with this inquire into the possibilities remaining for more exact and more enlightening studies, we gain expectations and hopes unsurpassed in any of the callings or avocations of man. As horticultural science and art have been improved within our memories, so in the near future may we confidently look for advances proportioned to the attention and ability bestowed upon them. In the recent establishment of endowed experiment stations we certainly have hopes of better studies opening the way to more direct and better founded progress. These stations will, by no means, do all the work to be done. Amateurs and lovers of art will hereafter, as heretofore, have open eyes, deft hands, and warm hearts, prime essentials in labors of this kind. Indeed it is to the general interest for, and love in the pursuit upon which we must, after all, base our main dependence for progress, rather than in labors of government employes, however faithful these latter may be. Certainly private individuals must not and will not relax their efforts because of the establishment of stations whose business it is to experiment. One cannot take the place of the other, neither should the latter be allowed to usurp if they could, the privileges and opportunities of the former. Our other functions and faculties know hunger as well as those of the stomach. As we never hope to be able to have others eat for us, so we should never ask others to observe and think for us. Let each member of our organization become filled full of the idea that if he wants to keep up his interest and enjoyment in horticulture, he must establish in himself and for himself an experiment station and keep it running whether or not men are hired on salary to do work of similar character. Let us also be well possessed of the idea that advance must come in the future as in the past from amateur and voluntary efforts, that the government stations are to stimulate this rather than discourage and interfere, if the most good is to be secured.

What then, we may inquire, is the proper aim and function of the new experiment stations in regard to horticulture?

Without pretense of being exhaustive and without descending to details I venture an answer. Before this, however, let me say that nothing need be excluded in this station work. Anything whatever, may be undertaken of which there is reasonable prospect of usefulness, provided that the time and strength of the establishment is not frittered away or prevented from accomplishing its more important ends. No fear need be entertained that its efforts to advance in any line will clash with those of private individuals striving in the same race. The track is wide and long, room enough for all contestants. But the stations can do some things better than can be done by individuals. To these they should first and foremost direct their attention, letting others take second place.

1st. The stations should undertake things too unwieldy from any cause for accomplishment by individuals. Under this head come those that cost too much for ordinary private enterprise, those that necessarily run so long a course as to discourage individual attempts, those that by reason of complexity of details cannot be well done in any other way.

As an example, I name experiments in timber-tree plantation —groves for shelter and ornament and trees for summer firewood may be tested by any farmer, but to make a valuable addition to present knowledge in growing in quantity trees for general or special purposes as timber, requires too much outlay of money, and too long a course of watching and waiting for private means and private patience. Yet it is a matter of prime importance that such knowledge be secured, and when secured may be utilized by the hundreds and thousands who could not find out the facts for themselves. Contrast with this the competitive tests between two varieties of strawberries, or, if you please, between dozens of varieties upon the same soil and conditions. Two years may be sufficient for this, while for the former a half century would be a short time. Again, one experiment carefully completed may be practically sufficient for the State and century, while, however, through the latter trial the same kind of thing would be needed in a large number of places and at constantly recurring short intervals of time. Supposing abundant tests had been made a few years ago between Hovey's Seedling, Boston Pine and Longworth Prolific, how much would these tests be worth now? With varieties of apples the illustration would not hold so well, but I have little doubt other things can easily be found more specially germane to the station in contrast with the individual theory, comparing varieties of anything, important as this is acknowledged to be.

2nd. This station should make prominent in its work those things which require for their successful prosecution kinds and amounts of apparatus and other equipments not usually possessed by private parties. To this end the purchase of costly instruments by the station ought not to be considered extravagance, provided that by their use important ends can be reached.

DISCUSSION.

Mr. Gaston—Professor Burrill has advanced some excellent thoughts. We must advance, and only by carefully conducted experiments can we learn the value of any new variety of fruit. Individual experiments should be encouraged, as they will render valuable aid to the public stations.

Mr. Minier—Horace Mann once told me that in Prussia and Germany the roads were lined with fruit trees. The passer-by

was allowed to gather the fallen fruit, but that which ripened on the trees was sold.

Dr. Schroeder—I hope sometime to see the idea of planting fruit trees by the roadside carried out in this country. When in Germany some years ago, I was pleased to find the roads in perfect condition, with grassy sides, and planted with fruit trees sixteen feet apart. The fruit of these trees was annually sold at auction and the money it brought kept the roads in good repair. A wonderful work has been done there in improving and ornamenting them. No weeds are allowed to grow, and insects having no place to harbor do not increase rapidly. Every teacher there has a special education for his business and is expected to continue it through life. He earns at first, perhaps, a hundred dollars a year, after a few years perhaps two hundred, and after he has taught a few years longer he is appointed minister of education. These teachers are required to teach the natural sciences, and take their pupils to the field to study Botany, Entomology, &c.

NEW FRUITS.

BY E. R. M'KINNEY, LACON.

The subject I have chosen is not only broad and deep, but significant at this time, and although I may not say anything new, perhaps I may impart a little of my enthusiasm to some one else, and that will double the great factor in the production of new fruits. We are undoubtedly entering on a new era in fruit growing, and it will be well to stop and take a retrospective view of the field. Forty or fifty years years ago the great cry was, "We can't grow fruit in this part of Illinois and the West;" and tree planters were scarce, and only a few were bold enough to lock issues with the unfavorable outlook, and plant here and there an orchard, or a few peach and cherry trees, and these only along the timber belts. The timorous ones looked on, shook their heads and said, "You'll see, they're throwing away their time and money, only to reap disappointment and failure." But it was not so. Failure did not prove the end of it, for success came to nearly all of these early planters, and there was a more hopeful outlook than at first, and men began to multiply their orchards on the face of the Illinois prairies, and fruit became more plentiful and reasonably cheap, and they got careless and thought that all they had to do was to plant an orchard and turn the pigs in and let it go, and the fruit would come almost of itself. But a change comes; the old orchards that were planted and cared for by the few early ones, became of age and declined

in productiveness, which together with the go-as-you-please system of the later planters, and a succession of unfavorable seasons, is again causing the cry that you "can't grow fruit in the West," and this brings us to the issue before us. Now, how can we do better than to investigate the field of new fruits? Every one will admit that there is a demand for fruits better suited to our climate, in all the different species and kinds which we try to grow, and we do but try, in a great measure, for our failures are more numerous than our successes.

If we look around at our orchards we shall see that a great number of the kinds we have tried are found wanting. A few of the varieties of forty or fifty years ago still give us a little fruit, but orchards of that age are fast becoming numbered with the past, and the few varieties that remain we do not consider good enough or productive enough to be utilized by our present tree planters. Of new apples how few there are that fill a place in our needs.

Have Walbridge, or Pewaukee, or Wealthy, or any of the newer apples that are before the public, come up to the expectations of the planters? Of course the nurserymen trumpeted their praise, but where are the great orchards, bending under their loads of fruit that these "Climate-proof" sorts were to produce? And when the whole parade of new apples shall have been tried in the crucible, shall we have anything more reliable than the Winter Pennock, Vandevere Pippin, Yellow Belleflower or Rawle's Janet? And if we do go over to the Russians we get nothing better than the Willow Twig in quality, and not half so good in tree, for if the winters do not kill them, the insinuating blight does, so then in spite of all the hue and cry about all the new and hardy varieties of apple, we are succeeding in bringing forth failures as often as ever we did. I tell you the outlook of the apple problem is not good, and unless something happens we shall be obliged to import our apples from more favored climes. It is not my intention to give anyone the "blues," but let us open our eyes to the situation and make a beginning in the direction of raising new sorts.

Of course, anyone is ready to adopt any new fruit that is brought and forced upon their attention, if they can be made to see good in it. But did it ever occur to very many of our fruit planters that perhaps they might be able to originate something new in the way of new fruit themselves, for somebody else to "catch on" to? Now that this can be done and how, I will try to set forth:

Take a bushel of Yellow Belleflower, or other *good* apples. I mentioned the Yellow Belleflower from the fact that the flowers are imperfect, or lack pollen under certain circumstances, and consequently its seeds is more likely to be crossed with some other sort, and consequently more likely to sport, as it is called,

ie., more likely to differ from the original. Now pick out twenty or thirty of the best specimens of this bushel of apples and save their seeds. Do not let the seeds get dry, but keep in damp soil, or sow them at once, and when the young plants appear, very carefully tend them so that they will grow strong, and if growth enough is made you may get cions to graft in the next spring after sowing the seed, and if these grafts are made in bearing trees, you may be tolerably sure of getting fruit the fourth year, or even sooner. My plan would be to let these seedlings grow two years, at which time a tolerable clever nurseryman or orchardist could be able to select the good sorts from them. Now this is not "guess work." I know of an orchard that was grown from seed in the manner above described which, I verily believe has more good, hardy trees, and more good, fine large apples in it than an orchard of the same size, and planted with the same number of varieties selected out of the named varieties, would bear. What has been done can be done again, and improved upon too. The same course proposed for the improvement of the apple can be pursued for the improvement of other fruits. A continual breaking into habits and characteristics will cause changes to take place that cannot be arrived at by any sudden process, and if it is a fact, as some claim, that the plum and peach have been hybridized, the door has already been unlocked that shall open to the touch of the skillful hand that shall have the boldness to enter its almost sacred portals, and I say all honor to him who shall give us the first lesson. Poets sing and great men write about the mighty pen, but who is able to foresee the mighty changes that may be wrought by the subtle touch of the experimenter's tiny pollen brush? A dip in the pollen of this species and a touch of the brush to the stigma of that flower and lo! a change in nature has occurred that may change whole districts of fruitless lands into ruddy orchards or fruitful vineyards. Truly the pen is mighty, but the little pollen brush conducted by the same ingenious mind can produce mightier results for man's blessing, and is not so dangerous to his peace and happiness.

Leaving the apples, the next most important fruit, in my opinion, is the strawberry. A great jump from the high-headed, lordly apple down to the lowly, grovelling strawberry. But stop a minute and try your hardy apple tree mettle with the ice-defying strawberry. Let old winter blow ever so fiercely, and shut down ever so firmly, with his icy grasp, the strawberry, if properly mulched, comes forth unscathed, while if even the Russians are not hedged in with a well ripened growth they will show their weakness in their wrestle with old Boreas. But what of the improvements in this best of all natures, which we call small fruits? Are we getting ahead any, or was the Wilson the limit? Verily it *has* taken a long time to beat it, if it has been

done. Why, they raise good Wilsons yet, and yet I never grow it to my satisfaction, but it's a grand starter if we only take advantage of its best condition.

A dozen Wilson plants and a dozen plants of, say Bubach's No. 5 planted together and you have conditions for producing seed that will be a mixture or cross of these two sorts, for you see the Wilson will furnish the pollen and the Bubach the pistil, and so the change in nature occurs, and possibly an overturning of old systems of strawberry growing. I will give a little experience that may keep others from making the same mistake that I made twenty or thirty years ago. I thought I had struck the right track. We did not have the large pistillates like the Bubach and a few others we have now, but had to content ourselves with such sorts as Green Prolific, Russell's Prolific, Hovey, etc. In trying my experiment, I reasoned that if I planted Wilson and Green's Prolific (pistillate) together, I should be likely to have a cross of the two sorts. So I planted ten or a dozen pair of the different sorts, a pistillate and a staminate in isolated spots, so that the pistillate should not be fertillized by pollen from any other sort but the one I had chosen. But my experiment was a failure, from the fact that some of the plants did not bloom at all, while in other cases the two sorts did not bloom at the same time. Then there were not enough pollen producers to furnish pollen enough at the right time, so I did not get a single good berry in all my little patches. You see I had not learned the power of the little pollen brush.

Experiment No. 2. A dozen years ago I planted a patch of seedling strawberry plants, perhaps fifty different varieties. When they came into bearing I could pick as many quarts and as fine berries, that would average up in size of berry with a patch of the same size and planted with the same number of sorts of the same named varieties. So you can see that we need not lose money in trying seedlings.

One more experiment. In the fall of 1887 I planted a plant of the Bubach No. 5, in my greenhouse, and at the same time I planted a few plants of the Lacon. The next spring I caught ripe pollen on the Lacon at the right time for the Bubach pistil. The side of the Bubach, touched with the pollen, filled up and ripened seed, from which I had the good fortune to raise four plants, three of which are now showing fruit. One is pistillate and one is staminate; the other has not shown its eye yet. The point I wish to make by this experiment is, get your plants under control, so that you can keep bees and insects from them, that they be not fertilized by other pollen than you want used, and you can get the cross you want. And thus I might go on through the whole list of raspberries, blackberries, or any kind of fruit the experimenter wishes to try.

And now, dear friends, I surely believe this whole business is

in our hands, and so fixed by a benificent Creator, and the revelation is already made that we have control of the production of new and improved varieties of fruits. Only let us be judicious in the selection of the varieties that will be most likely to bring the results we wish to accomplish, and success is certain. The process may be slow, but if we spend our whole lifetime in the gradual changing of poor fruits into good ones, our work will be successfully accomplished, and our children "will rise up and call us blessed."

And, in conclusion, let me urge upon every one who would like to have more and better fruit of any name or denomination, to begin this year to try experiments. Raise seedlings from the best things you have at hand and in the right season. Try crossing varieties, taking notes of all your operations, and my word for it, if you are not an enthusiast now you will soon become one, and every spare moment will find you prying into ever flower of your seedlings, and watching the unfolding of every leaf as it expands, anxious to catch the first signs of the change that has been bronght about by your skill and devotion to the improving of the fruits at hand and under your control.

And so, by each one putting forth a little effort at first, we shall become a great aggregate in bringing out new and greatly improved varieties to take the place of those that have been weighed and found wanting; and we shall have honor, and not only honor but fame, and wealth will flow to him who is the successful one. And then we shall be helping the world back to to Eden, for surely in Eden there were the best of fruits and fairest of flowers, for was it not all pronounced good by the great Creator?

If I could say something, or if I have said something, that shall induce the friends of horticulture to take a new hold on this the noblest callings, then I shall be satisfied in this my feeble effort in putting my thoughts on this great subject before you.

DISCUSSION.

Mr. Augustine—Mr. McKinney says that we are sounding the praise of Pewaukee and Wealthy and that they are failures. This is certainly a mistake, for when in Wisconsin and Minnesota last fall I saw some beautiful orchards of these varieties, bending beneath their load of fruit.

Mr. Dunlap—I am that glad Mr. Augustine has become convinced that we can grow apples. A few years ago he was very despondent. I believe that in twenty years our orchards will be better than now.

Mr. Periam—The paper is a valuable one. We must experiment and investigate. Here is where our experiment stations may do very valuable work. An individual may spend a life time in the work and leave the experiment unfinished. If the man having charge of a station dies, his successor may take it up and complete it.

On motion of Dr. Schroeder, a vote of thanks was tendered to Mr. McKinney for his able paper.

CULTURE OF STONE FRUITS.

BY G. W. MINIER, MINIER.

Mr. President, Ladies and Gentlemen:

Were we called upon to say what body of men have been doing, and still are doing, the most practical good for the masses, would we, could we honestly leave out of that catalogue, the agriculturist and horticulturist?

"The Farmer Pays for All," is the telling title of a picture which you all have probably seen. But horticulture is the refinement of agriculture, and they should be honestly combined.

Agriculture is the foundation of good society, and horticulture is the religion of farming, which smooths and ennobles rural life. So far are these two noble occupations from being antagonistic; they are mutually helpful. They are, or ought to be wedded. Bachelordom and spinstership are not normal conditions of mankind, although they do, sometimes, make a precarious livelihood. So farming and gardening may struggle on without being united in holy wedlock, but it is not handsome, delightful nor profitable.

And now, ladies and gentlemen of the "Central Illinois Horticultural Society," a few thoughts are submitted to you by your old friend, on the trite subject of raising stone fruits in Central Illinois. By stone fruits I mean such as hard seed, inside the pericarp. You will excuse me for neglecting the use of technical terms. Your professors in your university may attend to that and I will confine myself to practical work. Horticulture is an art that mends and adorns nature, but does not mar her. Some years since, in the City of Washington and before that body of thoughtful men, "The American Forestry Congress," I said it is prudent to plant indigenous, not exotic trees.

This called out the good natured but severe criticism of my warmest friends, but is now, I believe, admitted by all to be but good, practical common sense, and is no heresy in tree planting.

I was never in my life accused of being too orthodox, even in matters theological, and may, perhaps be almost a heretic in tree

planting and fruit growing. We are obliged to adopt exotics to get our finest and most wholesome stone fruits. That peerless fruit, the peach, is an exotic. Therefore we must study its habits. As we know it cannot endure very severe cold, we must in some way protect it from the wintry blast.

It must be sheltered from the blizzards of Boreas and the frosts of Zero. If some sheltered nook, suitable in soil, elevation and freedom from water, cannot be found, then resort to root pruning and gently bend the tree to earth and fasten it there until April with gentle winds and showers assures you that both Boreas and Zero are conquered, and not to be feared for the next nine months. This is practicable. I have tried it successfully for the last three years.

The plum is indigenous, and may be relied on to give fruit, with proper clean culture, but must have society, companions of like nature and similar habits.

Dame nature plants her plums in clumps. "The plum thicket" is a familiar childhood phrase. When man attempts to advise or thwart nature, he is sure to make a failure. "Experience," says Poor Richard, "keeps a dear school," but most of us have to graduate in her college. Plant a single tree? Never. A clump, all of one variety? No. Varieties will aid each other in fertilization. What is necessary for the peach and plum is also for the Apricot, which the great botanist Linneus thinks to be a sport of the plum or *Prunus Americana*. But what of the Russian Apricot and *Prunus Simonia?*

Treat them and all foreigners, (exotics) with all courtesy, care and generosity, but put your faith and works (for faith without works is dead) upon your immediate friends, the indigene.

ENEMIES.

On Monday of the present week I visited the grounds of a most practical horticulturist. He lives in a very modest style, some five or six miles from my residence. A quiet man with a very breezy name. Pointing to a Wild Goose plum tree, said he, "I shall have plums this year. Clean culture, and plenty of wood ashes will fix the little Turk." This is really a remedy easily applied. You know he (the little Turk) is a very modest fellow. He would rather not be introduced to the proprietor of the orchard. Jar the tree. He hides his face and long snout under his belly, and drops to the ground where your poultry and pigs may find him, and by scattering shelled corn under your trees, and repeating the process every day for a few weeks you may rely upon fruit. Don't be too modest in your work. Shake off every plum that you can, and you will be delighted to see the hogs devour them. They seem to take them as an appetizer.

A digression just here will, I trust, be pardoned. I never was an admirer of swine, and yet must argue with a celebrated

American author, that there is a great deal of human nature in a hog, or else a great deal of hog in human nature. How eagerly each works for himself. There is, it must be granted, one trait in a hog that is praiseworthy and might be worthy of imitation by men. He will plunge into the real estate business, and if by good luck, pluck, or audacity, he gets more on his sides and back than his neighbor, he don't put on airs, and don't seem to esteem himself any the greater for his success.

Our friend and neighbor, Mr. Geo. W. Orendorff, has got up a devise to intercept the curculio in his mischievous habits, to which I call especial attention. Every step in the direction of fruit culture is a blessing; and every man or woman who aids in fruit raising ought to be classed among philanthropists.

"Never surrender," must be the motto of the horticulturist, clean surface cultivation his practice, and on Heaven's assurance his faith may rest: "In the sweat of thy face shalt thou eat."

In conclusion, Mr. President and members of this society, will you permit me to make the following confession:

I was a teacher of schools until 1850. In the adjoining city of Bloomington are many who still express thanks for what I taught them. From childhood I have been a lover of Nature, and early resolved to be,

> "Slave to no sect, to seek no private road,
> But look through Nature up to Nature's God."

I became a member of the agricultural and horticultural societies of your State to learn the arts of agriculture and horticulture. And when my friends, as they sometimes do, admire the trees which these hands have planted and cultivated, and thank me for the fruit they eat at my board, I say, tacitly, these friends don't know that they are not so much indebted to me as they are to the agricultural and horticultural societies of Illinois.

DISCUSSION.

Mr. Augustine—Mr. Minier tells us that plum trees should be planted in groups. What is the advantage of this method?

Mr. Minier—Some varieties of plums are not self-fertilizing, and while one or two trees may be fertilized by bees, we are never sure of a crop unless they are planted near other varieties. Nature plants in groups, and it is always safe to imitate her methods.

Mr. Gaston—Many years ago I sold a Wild Goose plum to a man in Putnam County and by accident he set it near a thicket of wild plums and for years it has borne enormously. Prof.

Budd, and Messrs. Minier, Wier and Gaston approve of this plan, so it must be right.

President Dennis—Several years ago I tried the experiment of smoking plum trees with coal tar to drive away curculio. I had a crop of plums, and concluded that I had discovered a long-sought-for-secret, but found that others had plums without smoking.

Dr. Schroeder—Will any branch of fruit growing pay with the present low prices and uncertainty of crops?

Mr. Vickroy—Yes, if properly managed, it will pay moderately; perhaps as well as any ordinary business.

Dr. Schroeder—I do not agree with Mr. Vickroy. With strawberries, blackberries and raspberries at one dollar per crate, and grapes at one or two cents per pound, it is a losing business. In the Lake Erie region they grow immense quatities of grapes, but do not realize any profit from them.

Mr. Dunlap—The time has been when the farmer could raise a little more fruit than was needed for home use, and market it profitably. That time has passed, and commercial fruit growing has gone into the hands of the specialists, but every farmer should plant for home use.

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EVENING SESSION.

The evening session was held in one of the halls of the Normal University, and was largely attended. The first paper was on

WINDOW GARDENING.

BY MISS JULIA GREEN, LACON.

In reading a very fine article on education in a number of *The Chautauquan*, I was much impressed with the story of the sorrows of a widow, whose boys, one after another, ran away from home to go to sea. She had always entertained a great horror of the sea, although none of her relatives were sea-faring men. She had always taken pains to tell the boys of the dangers of the deep, of the terrible storms, and of the hardships and privations to be endured by seamen.

Living in an inland town, she had never given them the opportunity of reading or listening to sea stories. She was at a loss to know why her sons were attracted to the life after all this, until

her clergyman, a wise old man, pointed to a very handsome and valuable painting in her living room, saying, "That is what caused your boys to run away to sea." The picture was one of her wedding presents, and represented a fine ship in full sail. It had hung where her children could always see it and admire it, and it made an impression upon their youthful minds that nothing could efface.

We read, in our school days, of a battle that was lost "all for want of a horse-shoe nail;" but, although they see the importance of the horse-shoe nail, how many realize what effect upon our characters, and our whole lives, a mere picture may have? One who has grown in a rocky, sterile, mountainous country, differs as much in character from one who has always lived on rich, fertile plains as the native places of the two differ.

If such things affect a human life to such a degree, what will not the constant association, either in the taking care of plants or simply seeing them, do for one? A person cannot live in a home where there are house plants, and not be influenced for the better by them.

I think there is a whole sermon in this fact. Everyone who has a window admitting even an hour's sunshine should have a plant or two. It does not require technical knowledge and elaborate information to be successful with house plants, as many suppose. "Consider the lilies of the field, how they grow," and apply your knowledge thus gained to the care and cultivation of plants. It is not so important to start the plants when the signs are right, or to plant them in the moon, as it is to use a little common sense, put them in good earth, set them in a sunny window, and water them regularly. Drowning them one day, and drying to death the next, does not insure thrifty plants.

House plants, like most things in this world, will reward you according to the care bestowed upon them. There is no plant more satisfactory than the geranium. For winter blooming, slip them in May, and not later than the first part of June, notwithstanding that the books say September. For convenience, start the slips in one box. As soon as they begin to grow, transplant them into the pots you wish to put into the windows, and do not transplant again until you put them in the ground the next May, when you take slips again. When you transplant the old plant from the pot to the garden, set it, pot and all, on the spot in which you intend to put it, and leave it a few days. In that way, it becomes used to the new place, and when it is removed from the pot to the earth its growth is not checked. Try to set them out just before a rain. If it is not convenient fo do so, pour a quantity of water on the roots before they are entirely covered. Then finish filling around with earth. In this way, the earth will not dry out and bake hard around the roots.

The calla is another beautiful plant that pays well for good care. To make it thrive and bloom, set the plant every day in scalding water, and pour some over the roots. It requires to be pretty wet all the time.

Do not *crowd* your window. One handsome plant is worth a dozen crowded into the space *one* should occupy. Never *turn* your plants, if you want them to be strong and nice-looking, and never move from one window to another. Do not wash them to death. Do not make the mistake so many amateurs make, of putting in too large pots. Give them, as near as you can, their natural condition, and let them alone.

FRUIT AS AN ARTICLE OF FOOD.

BY MISS LUCY GASTON, LACON.

I know a lady who has the reputation of having not only a single hobby, but a whole stable full of them. A hobby is not a bad thing to have, in the modern acceptation of the term. One who is not specially interested in one thing or more, as the case may be, cannot accomplish the results of the more interested neighbor. The writer has been charged with having a hobby, and we will now enjoy a canter along a road which has but few travellers. Many questions likely to be discussed in a Horticultural Meeting are of special interest to those only who are engaged in fruit growing, but those questions which relate to fruit as an article of food are of interest to all.

Upon the quantity and quality of our food depends, in a great degree, our being, as well as the condition of our health, both physically and morally. Let us suppose a man surrounded by natural influences; let him have access to all fruits and grains for food, and also have at his command small animals. To him the use of these animals would never occur; every sense of the body and mind would attract him to the fruits and grains, and in them he would find his highest satisfaction. Compare an orchard, or vineyard, or the waving fields, with cattle and pig pens; from which would we naturally choose our food? View with me baskets of apples, peaches and pears, or go to the leafy bed where the strawberry hides its radiant face. Now let us go to the slaughter pens. Man can live without orchards or vineyards, but without slaughter pens, never. Hear the dull thud as the indolent porker or the gentle sheep pays the penalty of being good to eat. Perhaps, if we go to the butcher shop the flesh will be more appetizing as it is there displayed for sale. Here in array are displayed those mysteries of childhood days—sausage, head-cheese, (which accomplishes the purpose of making cheese of the head that partakes of it) and bologna, the whole family of which we would be glad to see confined to its native land. If left unbiased by previous habits, which would we take? Both, do you

say? But it is a fact; meat is conceded to be a necessity, and fruit a luxury.

At one time a tropical climate existed over the earth, even to the poles. Everywhere the original man lived upon wild fruit, which he gleaned from the trees; but in the absence of his natural food, rather than starve, he killed an animal at his command and partook of its flesh, with which he saved life. This necessity, rather than adaptability, led primitive man to the consumption of meat. But there is no further necessity for continuing the flesh diet in America, as we can live on bread and fruit nearly the entire year, and a wise adoption of a bread and fruit diet would result in great benefit to mankind. Thus, one would become warm without being excited to intense heat, and would be less liable to be affected by contagious diseases; the muscles would attain their highest power, the whole appearance become beautiful, and nature would reach its highest perfection. Chronic diseases may be cured, and many diseases which have their origin in a fatty condition of the food may be relieved by a fruit diet; and although so simple and easy a treatment, we are safe in predicting for it no great popularity. There are many, we fear, who will choose rather to be sick than deny themselves, rather than substitute fruits for meat, pies, &c. We will eat, and we suffer, too; enjoying our good dinner from 12 o'clock to 1, suffering with headache till the next meal, when we will try to eat something to keep our strength up. Happy is the individual who will give this method a trial. The man or child who does not thus diet may be reasonably well, but doubtless we are safe in saying that they would be as well on less. In my experience as a teacher, I could but notice the difference in the aptness to learn between the light and the heavy eaters. The pale, heavy complexion, which is caused by a lack of nourishing food and a neglect of exercise, and the rough, pimply skin, may be replaced by one of smoothness by following a fruit diet. A fatty diet will cause even a monkey's face to break out in eruption.

The bread and fruit diet is now in much more general use in Germany than one might suppose; because of its cheapness, many are forced to it. Sweet brown bread and fruit! What meats can compare with them? Much nervous force is used in digesting food not needed; might not this be better spent? God pity the man who is content to spend his God-given powers in eating and sleeping. Is not the life more than meat? The wonderful possibilities of this kind of a life may be seen by noting the effect upon a gentleman of Cincinnati, who, although eighty-three years of age, knows not what suffering is, having never felt an ache or a pain. He uses no meat nor grease, and has not for fifty years, and attributes his freedom from sickness to his abstemious habits. Gladstone, too, gives all the credit of his wonderful power to his simple manner of living. What does Paul

mean when he says, "I keep my body in subjection in all things," but that he has the mastery in these things. It is said, that as the brute is lower than man, to partake of the flesh has a tendency to lower man, and he who uses a great deal of meat is more brutal, as the animal seems to become a part of him. One writer says that actual hunger three times a day is impossible. Dr. Tanner's experience in his two fasts of forty days each, as well as the one hundred days' fast of George Francis Train, shows that people are not in so much danger of starving to death as one might suppose by missing a meal.

Hygiene is becoming a popular study in this day and age, and who will not say the forerunners are now among us for a better manner of living? Do not the shattered nerves make demands that cannot be ignored? To make this change, there seems to be necessary a certain purity of character—those whose habits are corrupt find it hard to change. The ideal fruit for man is ripe, uncooked fruits. These especially excite him to his highest attainments. Dr. S., of Chicago, says meat-fed children are liable to be cross. A family of children fed upon meat were quarrelsome, and when put upon a grain diet became cheerful, and were also more than ordinarily exempt from colds. But very few older people will give up that to which they are accustomed. This is seen in tobacco users. The rising generation must not be an inferior one, which it will be if a change is not adopted. The youth of our day are inferior physically to their parents, and should change their habits of living. Being in harmony with nature will do much to bring us into communion with nature's God.

All having the care of children should strive to know the action of different kinds of food. The late discovery of a natural cure for drunkenness is worthy everyone's investigation. Drunkenness is a disease, and the sooner we recognize this the better.

It may not be best to place a ban upon all meats, but the meat for the family should be well chosen. Ignorance on these questions is the mother of ill health. I have always had a special liking for those varieties of fruit put away by my horticultural father, and with maturer years have come some strong convictions, which I have tried to present to you, and which you may take for what they are worth. Horticulture ought to enjoy Divine approbation, and as fruit was in the Garden of Eden, so it may be on our tables.

Dr. S. H. Peabody, Regent of the University of Illinois, now favored the audience with an entertaining and elaborate paper on the "Mission of the Sunbeam," which was highly appreciated by all who heard it. It has not been furnished for publication, and a synopsis cannot be given that will do it justice.

THURSDAY MORNING.

Vice-President Gray called the house to order and invited Rev. Mr. Kerr to invoke the Divine blessing.

President Dennis having been called away by important business, Vice-President Mann took the chair and presided during the day. The chair announced that the first business would be the election of officers. This occupied but a few minutes and resulted as follows:

President—F. I. Mann, Gilman.
First Vice-President—H. L. Doan, Jacksonville.
Second Vice-President—G. W. E. Cook, Lacon.
Third Vice-President—Miss Lucy Gaston, Lacon.
Secretary—A. C. Hammond, Warsaw.
Assistant Secretary—Miss Bessie M. Nash, Warsaw.
Treasurer—W. H. Schureman, Normal.

The Marshall County Horticultural Society extended the Society a cordial invitation to hold its next annual meeting in Lacon, some time in June. On motion, the invitation was accepted.

REPORT ON RASPBERRIES.

BY LEWIS DUCHESNE, LACON.

Mr. President and Fellow Members:

The general crop of raspberries for the past year, both of red and black, was poor, as compared with former years.

The condition of the plants of Black Caps was, and is now, very unfavorable. The plants of Red raspberries are fairly good.

The canes of the Black Caps were severely killed back by drouth and will produce a very light crop the coming season.

Red raspberries have done much better here than the Black Caps, as they have withstood drouth and severe winters. We find that a plantation of Red raspberries will outlast a plantation of Black Caps, and prove the most profitable for a series of years.

I have tried applying earth from the middle rows, to the base of the old plant, and found it to be of the greatest benefit. I discovered this by accident, in the blossoming season. Having at that time to straighten up a few plants, I thought to make the bushes stand up, I would use earth instead of using stakes. I piled up a flat mound about four inches high and two feet in diameter, pressing the earth solidly amongst the base of the canes. This sustained the plants in an upright position, but its greatest benefit was, that when the fruit ripened, while on other plants the

later berries were dried up and unfit to market, the fruit on these particular plants was carried through in good shape, the later berries being fully as good as the first, and much superior to that borne by any of the other plants not so treated. The new canes made also a better and healthier growth, and they withstood the winds and the storms in good shape. The regular cutting back of growing canes has been my practice, sometimes the lateral branches being stopped; or cut back, also. This refers to the Black Caps.

The following varieties of black raspberries are the best for this county, so far as tested: Mammoth Cluster and Gregg. The Doolittle is very hardy and early, but the fruit is not long enough in season, the first few pickings being very good, the balance too small to gather.

The following varieties of red raspberries are used here: The variety on my grounds is the Cuthbert, and it has proved entirely satisfactory, being a large berry, productive, and sells readily, making its cultivation very profitable. The plants have withstood the winters' cold and summers' heat very satisfactorily, and produced very fine crops of excellent fruit, which I have sold readily in our home market at profitable prices. The Thwack variety and Shaffer's Colossal have proved good and reliable on the grounds of Mr. Rowley. The Turner is early and productive, but rather soft for market, and has been injured in this locality by cold and drouth.

In my opinion, the best manure for the raspberry is good, clean cultivation on good soil. I do not think it advisable to disturb the plants by any pruning or cutting out of old wood at the close of the fruiting season. The land should be occasionally cultivated by shallow plowing, but no late stirring of the soil is to be done, as it induces too soft a growth for the plants to go into winter with safety. The old wood, I think, should not be taken out until early spring. Cutting back the canes should, in my opinion, be deferred until the new growth has started in the spring. Cultivation by the plow should be shallow, not too close to the row, and the land left flat as possible.

DISCUSSION.

Prof. Burrill—There is a general complaint of the failure of raspberries. They often leaf out and bloom, and then wither and die. Some of our growers have supposed that it was caused by drouth, but we have the same loss in wet seasons. We often find brown spots on the leaves and young canes; this is a fungus, and the spores germinate very rapidly, especially in damp, foggy weather. I am not sure that this is the cause of the difficulty, but suspect that it may be.

Mr. Gray—I have had this same experience with Mammoth Cluster and Doolittle. The fungus first made its appearance after a very heavy crop. I did not get a bushel off of three acres. The Snyder Blackberry suffered the same way. I think I shall be compelled to give up growing cane fruit for two or three years. The Miller cricket has been a great pest in my raspberry plantations.

Mr. Doan—After two or three heavy crops, plantations become exhausted, and are liable to be attacked by this fungus, but if heavily manured or mulched, are more likely to escape.

THE LIFE OF AN APPLE TREE.

BY F. I. MANN, GILMAN.

In the present condition of apple tree growing, it would be well for us to consider some things in its construction other than the apparent surroundings and conditions. That our so-called varieties undergo change in certain characteristics as they become older, I think can hardly be denied, and it is important that we investigate some of the causes which lead to these changes.

Whatever definition we may give to life, or however we may consider it, the element of greatest importance is the tendency to continue existence. A new life may be born, but if it has not in itself the desire or tendency to continue its existence sufficiently strong, the life is given up. This tendency to continue existence is termed vitality, but we should not confine this use of the term with the one simply meaning thriftiness or an apparent life force. The thriftiness may be due only to perfectness in environments, and not to any strong tendency to exist. It is not necessary here to consider any of the causes that modify this tendency to exist in the reproductions of the new individual, such as the conditions that would give strong vitality, or the contrary. It is sufficient for our present purpose to consider that every new life has a normal amount of vitality, or tendency to continue its existence for a somewhat certain period of time, known as the period of longevity. A child is born with a tendency to live three score and ten. Its environments largely determine whether it lives so long. But we could not consider that it had any tendency to live for two hundred years, whatever its environments might be. So we may consider the horse as having a tendency to live for a score of years; the kine, sheep and swine, each its own period of life; the clover, with continuance of but two years, and other plants and animals having their own period of longevity, ranging from a century and more down to but a few moments.

Life is a property only of an individual. It is something that is brought into existence only through the production of a new

organism. It is something not possessed by species, genus or variety, nor by nations, States or towns. It is something given only with the hereditary force of parental blood. It is bestowed only upon the individual of parental production. A new life is brought into existence only by a blending of parental individualties into a new and different individual, whose life is then commenced to continue for a generation.

In the nursery there are two distinct divisions of propagation. One is from seed where there is true reproduction, or the formation of new individuals. The other is by division, or a continuation of an individual previously formed. In the latter common method of propagation, there is no true new individual formed, and hence no new life commenced. In case of propagation by cuttings and layers, it is simply a continuation by division of the once formed new individual, which has its tendency to live for only a generation, and commencing with its formation.

In the case of propagation by grafting and budding, the matter is somewhat more complex, inasmuch as a new, true individual is used as a part of the new division, and from which new life is the influence manifest upon the old.

The development of a single bud from an individual, gives us only a continuation of that individual, or only a branch of that individual, so to speak, which is subject to the same laws governing its life and vitality as though it had remained on the individual; excepting such modifications as may be made by its new environments. If, for instance, an individual in the vegetable kingdom is born whose generation is fifty years—that is, its normal tendency is to exist such a time—and after forty years have passed we take a bud and develop it into another tree, or really into a separate branch of same tree, what have we done to overcome its tendency to decline with old age, as if left on the old tree, only so far as any temporary influence, due to root, new soil might be felt? Aside from these influences, nothing has been done to check the encroachments of time, and when the generation is ended to which our branch belongs, it will succumb to its enemies. Such are the laws of life and death.

Among these causes that modify the life of the divided twig or bud, are soil, climate and the new individual to which it has been joined. An individual moved to a more favorable soil would, to a certain extent, have its length of life increased. Nature, herself, has adopted this plan for continuation in her process of division by runners, layers and sprouts.

Probably the influence of greatest importance is the blending of new life with the old, as in case of budding and grafting. Here the old life is worked on the new individual, recently produced from seed. There is a blending of vital forces, and the youth and vigor of the root or new individual is felt by the old

blood of the bud or scion. Whether there is any influence extending from root to branch, fruit or leaf, as to their form, is not a matter of importance in this connection. From the fact that old buds or scions put on roots of stronger vitality make stronger trees; that these roots are modified in their habits of growth, and that old buds worked on new blood prove strengthened, would indicate that there was an influence, so far as vitality was concerned. The top-working of old varieties that are in their decline, upon some of the newer sorts, is followed by increase in vigor and growth. If the old were worked upon old sorts, the change would probably be but little, if any.

Now, if you will grant for the present that vitality is the essence of life, that it is the property only of the individual, and comes into existence and goes out with the individual, we will make the application to apples. Our commonly called varieties of apples are not varieties at all, strictly speaking. We could make any arbitrary division we choose for variety, such as red apples, striped apples, large apples, etc., and ascribe our different sorts into such and such a variety. If we had red apples that would reproduce only red apples from its seed, we could say of the different individuals or kinds, that they belong to the varieties of red apples. But we have no such divisions that separate our different so-called varieties. Our red apples have but little tendency, if any, to reproduce red apples from seed; nor have any of our so-called varieties much of any tendency to reproduce any of their characteristics with certainty. A Ben Davis is no more apt to produce another Ben Davis, than is a Willow Twig; is no more apt to produce a tree in appearance like a Ben Davis than like a Tallman Sweet. In fact, we can make no specific prescription from which the seed might not vary.

The sorts of apples, then, are not varieties, and we must consider them only as individuals, capable of being multiplied by division, and each division having the identical characteristics of the original, and partaking also of its vitality, modified as above considered. We should, then, expect our individuals, or so-called varieties, to be subject to the same laws of maturity and decline, as all other individuals. If the normal life of an apple tree is forty or fifty years, we should expect those varieties or individuals produced thirty years ago, to be reaching a ripe old age, and in a condition not to withstand successfully the trials that younger blood could meet.

Where are the varieties of fifty years ago? Gone. Where are varieties of twenty-five years ago? Going. Much of our hope for the future should rest in the production of new individuals having qualities we want, and that they be thoroughly tested as soon as is possible, and disseminated, that the orchards may receive as much of the lifetime of each individual as may be possi-

ble. The importance of thus bringing out new apples and testing early, is a matter of importance which the Horticultural Societies at present realize more than ever, and have already begun a more systematic work in this direction.

DISCUSSION.

Mr. Gaston—This is a wonderfully important and interesting question, and one that should be carefully investigated. Whether the top makes the root or the root the top is a matter of controversy. I claim that the top makes the root.

Prof. Burrill—If this proposition, that every tree is a distinct individual and has a life race to run, and then deteriorate and die, is correct, we certainly should know it, as any effort to restore these decaying trees, will be useless. Mr. Knight, a horticultural writer of a hundred years ago, proclaimed this same doctrine, and named the Ribstone Pippin as an apple that had run its race; but the fact that this variety is cultivated to-day spoils his theory. Yet I think there may be something in it. Certain varieties of potatoes and other vegetables seem to prove it. Have these individuals fullfilled their destiny? Some of our German scientists tells us there is no such thing as bud variation. If this be true, when we get a strawberry or other plant established, it remains the same indefinitely. Our careless method of selecting potatoes and other seeds has a tendency to make the varieties deteriorate.

Mr. Periam—That there is such a thing as "heredity" in vegetable as well as animal life, few will question, hence the importance of healthy, vigorous parentage. This question of bud variation is one of exceeding importance, and should be better understood.

SMALL FRUIT FOR THE FAMILY.

BY D. H. GRAY, ELMWOOD.

As Mr. Gray failed to furnish a copy of his interesting address, the Secretary can only give the following synopsis:

As I understand this question it refers to the growth of small fruits by the family as well as for the family, and the children take as much pleasure in watching its growth and development,

and hunting for the first ripe strawberry as they do in eating it.

The more acid fruits, such as gooseberries and currants, are healthy and grateful to the palate, and should be used in every family. Currants planted in the open ground seldom bear well, but if planted along the garden fence, where they are shaded part of the time, they will do much better.

The strawberry is the most delicious of the small fruits, and fortunately easily grown. The farmer may plant and cultivate like corn, and late in the fall mulch heavily with rotten straw and secure good crops. Sharpless, Downing, Crescent, Bubach and Warfield I consider the best varieties. Mt. Vernon is a late berry and will extend the season ten days.

Raspberries follow strawberries very closely and fill the gap between them and blackberries. The planters should select those varieties that are found to succeed best in his neighborhood.

I consider Stones' Hardy blackberry much better in quality than Snyder, and after the second year is more productive. It should be more largely planted.

A few cherry trees are indispensible to every fruit garden. I would plant Dyhouse and Early Richmond. A whole colony of robins nested in my trees this spring, and I thought I should be compelled to destroy their nests to save the cherries, but found they were catching cut worms, and concluded they would pay for the cherries they ate by destroying insects.

Grapes, of course, will not be neglected. Plant Moore's Early, Concord and Niagara.

Plum trees should be found in every garden. They grow very rapidly, and if planted in groups bear heavily. The curculio is not an unmitigated evil. It often thins my plums so that the crop is more valuable than it would be otherwise. Damson and Lombard will do well if grafted on the Minor or Wild Goose stock.

DISCUSSION.

Mr. Augustine—Would you have the group all of one variety, or should different kinds be used?

Mr. Gray—The Wild Goose do well if planted alone, but the Minor are deficient in pollen, and must be planted with something else.

Mr. Dunlap—I have a group of Wild Goose, Minor and Chickasaw that bear well, but single trees do not. We have a fine collection of fruit in the other room, and I move that a committee be appointed to examine and report on it. Motion

adopted, and Mr. Gray and Mr. Minier named as the committee.

Mr. Browne—Why does Mr. Dunlap recommend growing seedlings of the Crawford, while it is one of the tender varieties? Why does he say plant seedlings at all, when we were told this morning that the seedling differed so widely from the parent tree? Why not advise the farmer to buy their trees, so that they may know what they are planting?

Mr. Dunlap—The Crawford is more likely to reproduce itself than any other variety. I find that seedlings are much more likely to bear than budded trees. I have a cherry orchard on Morello and Mahaleb stocks. For several years those on Morello bore best, but I ridged the orchard up and the Mahaleb has now taken root above the graft, and they are alike productive. If sheep are kept in the orchard you will have no trouble with sprouts.

Mr Augustine—Morello sprouts so badly that trees on this stock are not fit to plant near the house. I am glad to know that if trees on Mahaleb are planted deeply they root above the scion and make good trees.

Mr. Mann—I have trees on both stocks. On Morello they bear the earliest, but those on Mahaleb have the best fruit; I very decidedly prefer the latter.

Mr. Gray—In discussing this question of different stocks it is quite possible that we may not understand all the conditions connected with it, such as soil, location and moisture. Cherry trees are not suitable for the lawn.

Mr. Augustine—I would like to hear from the orchardists present, in regard to their experience with Russians, and the hardy varieties.

Mr. Dunlap—A year ago last winter I said in a paper read before the State Society that the Russians had disappointed their friends. Mr. Tuttle, of Wisconsin, who saw the article in print, wrote me that he thought I was mistaken on that point, but a farther correspondence showed that the fruit was all gathered from his trees August, 15th. It is therefore seen unnecessary to give them farther thought as winter varieties.

AFTERNOON SESSION.

GARDENING FOR THE AMATEUR.

BY J. S. BROWNE, ALTON.

Mr. President: In compliance with a request of your Secretary to write a paper for this meeting of your Society, under the head of "Gardening for the Amateur," I wish to call your attention to some things, that, though they are not new, are not as generally known as they should be.

To the amateur I will say, by all means make a hot bed; the attention it will require is small when compared with the benefits that will accrue from it. It is not necessary to dig a hole in the ground, as many do, to put the manure in, but instead, make the bed on the top of the ground three feet wider and longer than the frame, then bank up all around to the top of the frame with manure. After the season is over the manure, with what soil may be left in the bed, should be turned over, and this compost used for the soil the next year; any surplus makes a first class fertilizer for anything.

For early lettuce make a bed about the middle of January, or first of February. As soon as the lettuce has grown about three inches high commence on one side, and with a knife cut as much as may be required for a meal, taking care to cut above the crown of the plant; continue this from day to day, and by the time the bed has been cut over, that which was cut first will be ready to cut again, and so on until the season is far enough advanced, when these plants that you have been browsing off for the last six weeks, may be taken up and planted out in the garden and will have headed out long before seed planted outside. Those who have never eaten this young lettuce do not know what *good* lettuce is. This spent hot bed will make an excellent cold frame for transplanting tomatoes, egg plant and anything that requires transplanting before putting out into the open garden. Radishes are far better when grown in a hot bed than when grown in the open ground. Beckert's Chartier will be found one of the best for this purpose.

If very early egg plants are desired plant seed about first of February. They should be transplanted in the bed at least twice giving them plenty of heat; it will seldom be found necessary to take the sash entirely off; plant into the open ground just before or when strawberries are beginning to ripen—nothing is gained by planting earlier. Thoroughly wet the soil before planting out and as they make lots of fibrous roots, a sharp spade should be pushed down between each plant when they can be taken out with a large ball of earth.

In order to get early cucumbers, nutmegs and watermelons, take pieces of sod, cut about four inches square by three inches

thick, putting them in a hot bed with the grass side down; plant the seed in these—a gain of two weeks may be made by this method.

To get the best results with cauliflower the sun should never be allowed to shine on the curd; to prevent this bend the inside leaves over the curd until the main stem breaks—this must be done every day or two. Perhaps the better way is to slip a rubber band over the hand, then gather the leaves together into the hand when the band can be slipped over the leaves holding them together over the curd; or the leaves may be gathered together and tied with a string. Henderson's Early Snowball is the best I have tried. With ordinary care ninety-five per cent will head. No person who likes celery should be deterred from raising it by thinking it is something difficult to grow; it is no more trouble, until it comes time to handle it, than cabbage, only don't expect to raise good celery (or anything else for that matter) on poor ground. Plant the seed as soon as the ground will work well, in April, being careful not to get it too thick; cut off the plants two or three times about two inches from the ground before transplanting to where it is to grow permanently. This will make the plants more stocky and they will have better roots. The red celery is far more solid and of better quality than any other kind. I do not remember of having a single hollow stalk since we have been growing the red varieties. Henderson's New Rose will be found one of the best of this class.

Those who are fond of summer squashes, such as Bush Scalloped and Summer Crookneck, will find the Vegetable Marrow much the better. For winter nothing is better than Essex Hybrid; it has all the good qualities of the Hubbard, and is no trouble to grow.

For extra early peas plant some seedsman's "first of all" (and every seedsman has a "first of all," though none of them are much of an improvement over the old Dan'l O'Rourke), but plant early in some spot where they will get the afternoon sun as well as the forenoon. No matter whether the soil is in good condition or not, plant them early even if the ground is so wet that you have to sit on the fence and put them in with a shot-gun, for if not early they are not worth planting at all. After the soil gets somewhat warm the wrinkled peas will grow, and when one can get a sweet wrinkled pea, who wants a smooth white one such as all the extra early ones are?

McLean's Little Gem is one of the best early wrinkled peas. It is of as good quality as the American Wonder and a far better yielder. For a late pea of the same quality the Stratagem will be found as good as any. A pea should show no white when cooked. I know it is a little more trouble to prepare them for the table when taken before the pods are well filled—more pods

have to be handled for the same amount of peas, but, then, all things that are worth anything cost some trouble.

In planting lima beans, watermelons and nutmegs, take the seed between the first finger and thumb and push it into the soil, with the germ down, about an inch and a half, then smooth the earth over them with the hand, not pressing it down over the seed; if the seed is of any account you will have no trouble about getting a stand; and another thing—it will come up very much sooner planted this way than when thrown in and covered with a hoe.

All small seeds that are slow in germinating, such as celery, carrots and parsnips should be sprouted before being planted. A good way, I have found, is to soak the seed for twenty-four hours in tepid water, then mix with some moist, finely sifted dirt, put in a closely covered vessel and leave in a moderately warm place until the sprouts begin to show when it should be planted; though I have planted seed with sprouts half an inch long and had good success. By following this system the seed comes up before the weeds and it is no trouble to keep clean, while, if planted without preparation, the weeds come with or before the seed, and make it cost more to clean than the crop is worth.

ROSE CULTURE.

BY G. W. E. COOK, LACON.

We are told in the long ago, the Goddess Flora, while walking one day by herself in a forest, came upon the dead body of a favorite nymph; one whose personal beauty, chastity of mind, with perfection of heart, had never been surpassed, making her a favorite daughter of the Dryads. Flora felt the only balm for her grief at the loss of so dear a friend would be the ability to raise from the precious dust a flower which should surpass all others in loveliness; assured of the assistance of Venus, with that of the graces added to the promised influence of all the gods, to assist in the transformation of the lifeless form to that of a plant whose bloom should exceed in every characteristic all other known flowers. The zephyrs came with that perfect condition of atmosphere whereby the blessings of Apollo might fall in rays of peace and harmony. Bacchus with streams of nectar, for its nourishment, Vertumnus enveloping the new creation, with mantle of rarest perfumes, while Pomona as her offering spread the virtue of propagation among its branches. The grand finale being a diadem from Flora's own hand, designed and prepared by a band of celestials which should forever signify to the world, "The Rose as the Queen of flowers." So beautiful was it, the angel of flowers sought its shade for rest and slumber. One day awakening from a refreshing sleep, and proceeding in the discharge of his duty of bathing its opening buds with dews from

heaven, he was so charmed by its loveliness of color, form and fragrance, he implored the gods for power to bestow an added grace. The petition was granted.

"And o'er the rose
A veil of moss the angel throws,
Robed in nature's simplest weed
Can then a flower that rose exceed?"

Solomon sang its praise, the Holy Land derives its name from it, the gods sought its aid, the first bloom being secured by Cupid as an offering to Hypocrates, the god of silence, that the lover of his mother Venus might not be divulged, and even to-day our lovers whisper "under the rose." By it Auriana told to her lover of her love and grief; returning it divested of its leaves and thorns he cheered her troubled heart. Neither poet with language, nor artist with color have exaggerated its loveliness. With it the pious hand beautifies the house of God. Love brings it in wreaths, joy and revelry it crowns, grief lays it reverently upon the tomb, wealth and luxury strew it everywhere, allegory sings it in the painted song of morning, it cheers the poor and sick, mingles with our tears and sorrows, and revels in our worldly paths. From the gathering of the Bacchanalian songsters, from the place of honor above the heads of royalty at the feast, to the modesty and purity of the home and tomb it has a place—"the queen of flowers."

The Rose must have plenty of sunlight and air; these with good soil and proper care will ensure you success with any variety. Any well prepared garden soil will grow roses nicely, but not to perfection. A great demand is made upon the plant when the highest grade of tree, form, color and fragrance are expected. Good strong, rich loam with leaf or wood mould, well rotted fertilizer from the cow stable or hennery, with an allowance of sand for ventilation, with little fear of fertilizing too highly, makes a proper soil for roses. Liquid fertilizers applied at any stage of growth will keep the soil and plant in profitable condition.

Fall planting, with extra protection, will prove the most successful I believe. Still I will take and set a rose whenever I can get it. In bedding roses, all ragged, bruised or withered parts should be cut smoothly off to the solid wood or root with a sharp knife, and all roots with a tendency to grow downwards shortened. Make the pit for setting larger than actually required, with depth sufficient to be able to fork up loosely the earth; (and with profit) work in decayed fertilizer below where the plant may rest. Wet the earth thoroughly, but not to excess, as you fill in around the plant, pressing the top earth down with the foot until there is no danger of the plants loosening or leaning from effects of the wind. It is a good plan to dampen all

plants when taken out for setting. As to place and arrangement in clusters, hedges or single trees, the taste and fancy of the owner must decide. Hedges are easily cared for, and admit of all sorts, color, kind or habit; with plenty of ground, they will repay all the care and labor bestowed upon them. For single trees, the habits of the plant must be studied; ingenious pruning with the habit of the plant must decide the effect to be produced. In clusters, the centers should be kept high, the effect of the natural habits of the plants from outer edge to center being far more pleasing than any results from pruning can give. Start with an outer row of the Little Button or Burgundy Rose, raising by half a dozen additional rows, to a center tree of George the 4th, Lady Douglas, or some pillar rose; but a limited use of the knife will be needed, if any. If you must cut, let your knife and fancy run free upon single stands. Propagating I do not consider profitable, to the amateur, (except for the pleasure and satisfaction it affords) while varieties are so numerous, and obtained at so little cost from reliable salesmen.

A description or discussion of seedlings, cuttings, suckers, layers, budding, or grafting, would not be profitable here. Almost any person having either to give would most likely be able to furnish prescription for treatment. With me, fall pruning, as fall planting, has proven the greater success, cutting away all, or the most, of the old wood, tipping the tender ends of the new growth, and in case of Hybrid Perpetuals, cut back from one-third to one-half of all new growth. In hedge growing, I follow the natural tendencies of the plant, without any endeavor to keep a uniform height. The knife destroys the effect when in bloom. Protecting in winter, we find, is forcing itself upon us with each year. Hill up the earth slightly around the plant; a box, barrel or keg set over it, filled with hay or straw, a board over the top to keep out snow and wet, gives plenty of air, protects as securely as any plan tried.

The rose yields to cultivation as promptly as any plant grown, while with much more certainty than most others. When quantity without regard to quality is desired, and the wish is for distant effect, the knife may be dispensed with entirely; good soil, proper care in all directions, judicious irrigation and use of knife, will insure perfect results. The rose will feel at home, and do its own house-work.

We should not expect too much from a plant the first year. We should be satisfied with possession, forego the bloom by pinching all buds and superfluous growth, quietly awaiting with careful attention for its full perfection by the third year! Then would we find far less poor varieties, and fewer florists to condemn for putting inferior sorts upon our hands. You will find from experience it does require that length of time to test a plant in all the qualities we expect from it—the first year the perfection

of the plant itself; the second, the bloom; the third, a perfect plant, perfect bloom, true in color and shade, with purity of fragrance. Should we demand all these at once?

We are furnished in the endless varieties something suitable for all that fancy or taste may call for. To be sure, a rose is a rose; but do we not want our particular rose for our particular purpose? We can raise the tall and drooping varieties for a graceful clump or stand, or fancifully cut or carve, until the faithful plant is completely subjugated to our ideas of what we require to suit our improvements upon nature, whether standing in its own dignity, bound to the trelles or pillar, or waving loosely in the hedge.

What roses shall we cultivate? What kinds are best? Which are the prettiest? Would you have any but perpetuals, &c., &c.? Who can answer the thousand and one questions in regard to roses?

I can only say, can any one turn aside from many of our old faithful, single season varieties? What collection can be the worse for having a season of bloom from the old Hundred Leaf? The Damask, the Episcopal, George the 4th, Lady Elps-Parsons, the Old Cabbage, the York and Lancashire, with many others. Are they not a fitting prelude to a summer gladdened with the successive bloom of the Le France, Gen. Washington, Gen. Jacquimenot, Mad Plantier, Hermosa, Coquette of the Blanches, Coquette des Alps, Mrs. Chas. Wood, Victor Verdier, American Beauty, Bon Marche, Baroness of Rothchilds, and the family of gigantic flowering Neyrous which with our climbers—Greville and others—to which may be added the large family of mosses, both single season and perpetual, which give us a perpetual season of sweet surprises from frost go, to frost come, of this beautiful queen of flowers, each variety in its season and place, each in its own independent beauty, careful to repay us for care bestowed, which they will do if we but give them a home to live in when we ask them to tarry with us.

ORCHARD FRUITS ON THE FARMS.

BY H. M. DUNLAP, SAVOY.

Mr. President: The subject of my paper implies that the farmer's orchard and not that of the commercial orchardist will receive attention. No subject should be of greater interest to the farmer than this of orchard fruits, but if we are to judge of the degree of interest by outward manifestations, such as practical tree planting and careful culture, we are forced to the conclusion that the interest with many is largely theoretical if it exists at all. It is said that man is a victim of circumstances, and to a certain degree this is true, but when we see so many farm homes on the

rich and fertile prairies of Illinois, destitute of fruit and ornamental trees, it strikes us rather forcibly that the farmer is at least a victim not of circumstances but of neglected opportunities.

Now I know that it is easy to invent excuses that farm crops demanded our time and that our attention was called in other directions, so as to preclude the planting out of trees and making the necessary enclosure to keep out live stock. You know very well that a visit to Neighbor Brown's in strawberry time is a very pleasant affair, and that you can easily consume from four to five pounds of his best Concord grapes at a sitting. Oh no! you haven't time to attend to these things, but Neighbor Brown has, and his fireside during the long winter evenings, you will confess, is a very hom-elike and attractive place to sit and consume Jonathan apples and drink cider made from his best Romanites. Is it possible that you are so blind to your own interests, and those of your family, as to assert that you cannot afford the time necessary to the planting out of a few fruit trees for family use? Do you bring up your family to hard labor, on a diet of salt pork and potatoes, expecting them to follow your illustrious example as tillers of the soil? If this method is followed you are likely to be disappointed for they will leave the home and farm at the earliest opportunity. Make home attractive, surround it with ornamental trees, plant out an orchard and fruit gardens, take care of them and get the children interested in caring for them, and you will have the question of how to keep the boys and girls on the farm mostly solved.

Many farmers are deterred from planting fruit trees and plants through ignorance of the culture necessary, and an idea that they are undertaking something beneath their dignity, and, as some express it, they have "no time to fool with such stuff." The latter class we hope, will run afoul of some tree peddler who will deliver him Ben Davis apples for Russians, for he deserves no better fate. To those who wish to learn, we advise them to read the horticultural reports or subscribe for some good paper on the subject. While there is much to learn it is still a very easy matter to make a success of fruit by ordinary methods of careful culture, a knowledge of which every farmer is possessed of.

The widespread destruction of apple orchards in central and northern Illinois has discouraged many, and up to this time prevented the renewing of the old orchards. Since the bountiful crop of last season, when the old trees bore such fine fruit, many have regained confidence, and many orchards will be set out in the near future. No live man of business sits down and folds his hands when disasters come. On the contrary, he lays again the foundation of a new business more carefully, and with the knowledge which comes of experience, avoids the errors of the past, rejecting all experiments and foolish ventures. So must the fruit grower return to the work of renewing the orchards.

upon the prairies of Illinois. Fruit has been grown here and can be again. Many promising varieties have been found wanting, while the most expensive have often proven the most worthless. Our methods of culture, or rather non-culture, have done more injury than good, and our selection of orchard sites has often caused a failure. But we must not give up.

What would have been the results had the capitalists and citizens of Chicago said after the great fire, "There is no use to rebuild, another fire may come and burn us out again."

Instead, they builded again, laying the foundations broader, deeper and more substantial than before, and on them erected a city ten times more beautiful, useful and valuable than the old wooden structures of the past. To-day these blocks of stone and granite stand as fitting monuments to the enterprise and sagacity of the people of that great city.

Our orchards, like the old wooden buildings of Chicago, a heterogeneous mass and tangle of good, bad and indifferent varieties, have met with disaster as destructive to them as the fire of Chicago was to the wooden buildings of that city. Does it not behoove us by energy, careful selection and good culture, to replace the orchards of Illinois in such a manner that they shall stand living monuments to our judgment and common sense?

How we are to do this is the question which now confronts us as individuals and as members of this Society. There are many questions to be settled and many errors to be avoided. There are those who, having some pet theory, endeavor to convince the public that their way is the highway to success. Budded apple trees and Hardy Russians have their exponents—the tree peddler becomes the missionary and the farmer the ready victim.

Let us leave experiments to those who can afford to make them, or if we undertake a new thing let us be sure our facts are in accord with the theory before we risk too much.

The apple is the most important of the orchard fruits of this section. The site for the orchard is the first thing to be settled. One says plant them on the highest ground, another says plant them on the low ground and you will succeed. I have seen good orchards on both locations, and my observation has convinced me that both may be right or wrong according as other conditions are present or absent. Ground that will best resist summer drouth will insure the best orchard, and the cultivation and care of the ground has much to do with this question. So select good soil, prepare it in the best manner possible with the plow and harrow, and then set your orchard trees at distances, two rods apart each way. Fall plowing is best when it can be done. When the ground is in good condition in the spring plant your trees, never putting them in when it is muddy.

I have fifty acres of young orchard, a part of which was set four years ago. Some of the trees bore apples last season.

Since planting out it has been in corn every season. The width of the planter being three feet six inches, gives about four feet six inches between the rows of trees and the rows of corn on either side, thus preventing injury, to a great extent, from cultivation. In cultivating tree-rows I use a five shovel cultivator drawn by one horse. In order to keep up the fertility of the soil, I use barnyard manure, and two years since I sowed rye after the last cultivation of the corn, and the following spring when rye was some two feet high it was plowed under with beneficial results. The present season I shall renew this treatment of sowing to rye, raise one more crop of corn, and then seed to clover for two or three years. In setting the trees I incline them to the southwest at a considerable angle. This is on account of the prevailing winds being from that direction. In the course of four or five years they assume an upright position. I have noticed orchards set in an upright position which, at ten years of age, leaned badly to the northeast, exposing the trunks to the burning rays of the sun, causing "sunscald." I believe in low headed trees and, therefore, have all my trees branch at from eighteen inches to two feet from the ground. Branching that low they subserve two purposes, keep the deadly single tree off the trunk of the tree, and protect the trunk from the sun. The second season after planting I was surprised to find my young orchard badly infected with both *round* and *flat-headed borers*. Many of the trees were injured to such an extent, about fifteen per cent. of the trees were replaced, and since I have kept up a systematic warfare upon the borers until now I have them practically eradicated. Not having been troubled with these pests before, I did not notice their work until some of the trees broke off at the ground. I immediately went to work with a knife and wire, cutting them out or punching them to death in their holes. The last of May I went over the trees with a wash compound of water, lime and soft-soap. In the spring and in Sept. I examined the trees, also. The round-headed borers live in the tree about three years, and are easily detected by the rust-colored sawdust that is pushed from the opening in the bark. You "know the workman by his chips."

The flat-headed borer requires a sharper eye. No chips are seen and no apparent opening occurs in the bark, a brown discoloration is the only sign. They complete their work in about one year and while less numerous than the other species, have been, in my case, more injurious. The round-headed borer is usually found about the surface of the ground while the flat-headed species usually work higher up on the trunk. Large numbers of nursery trees are infested with these insects and it is important that the fact is known to tree planters so they may be on the watch and the proper remedies applied.

Coming to the question of varieties, which is a very important one, I would say in general terms select such as have given the best results in the past and whose record of hardiness has withstood reasonable tests. To more specifically invite your attention and provoke discussion, I herewith enumerate the list for Central Illinois recommended by the State Society at its annual meetings of '87 and '88.

Summer. R. Astrachan, Benoni, Duchess.

Fall. Maiden's Blush, Wealthy and Ramsdell's Sweet.

Early Winter. Jonathan, and Grimes' Golden.

Late Winter. Minkler, Willow, Ben Davis.

For summer the Sops of Wine, and Golden Sweet also do well.

To the fall list could be added many good varieties as Haas, Fall Orange, Snow, Stannard and Bailey's Sweet.

For winter, the Rome Beauty, Rawle's Janet, White Pippin and Roman Stem are in many cases desirable.

For a list of ten varieties for Central Illinois I would select for a farmer's orchard of fifty trees as follows:

Summer. Two Benoni, two Duchess, two Red Astrachan.

Fall. Two Snow, two Maiden's Blush, two Wealthy.

Early Winter. Five Jonathan, five Roman Stem.

Late Winter. Fourteen Minkler, fourteen Willow.

The Golden Sweet for summer, Ramsdell's Sweet for fall and Tallman's Sweet for winter are in my opinion the best sweet apples for this section of the state, and two trees of each could profitably occupy a place in the family orchard.

The Early Richmond Cherry is the only cherry that gives satisfaction in this section. Grafted or budded on the common Morrello stock, the trees will bear two or three times as much fruit as when budded on the Mahaleb. This latter is the stock usually made use of by nurserymen, and the trees improve in bearing with age. If set deep, or ridged up after setting, they are soon on their own roots, and bear as well as on the Morrello.

The pear trees should be seeded down to grass early, as they seem to be benefitted rather than injured by blue grass. They appear to blight less when in sod than when under cultivation. The list of pears given by the State Society is a good one for this section—Flemish Beauty, Howell, Tyson, Seckel and Keifer.

For peach trees, I would recommend the planting of pits from the Crawford and other standard varieties.

Meeting as we do in this city of nurserymen, this subject should bring out discussion. I have found that the people are more to blame than nurserymen in the selection of varieties and the introduction of novelties. People insist upon being swindled, and will insist upon having something out of the usual line, at fancy prices. There is no nursery so well established but what some conscienceless tree peddler can come and sell trees right under his nose to his immediate neighbors at double the prices for

which they could be had at their home nursery. No nurseryman but would be glad to confine his apple list to a few standard varieties, but he has to meet the demands of his customers, hence the long list of varieties.

To the farmers I would say, make your arrangements to set out fruit trees upon the farm, and when set out take care of them and give the proper cultivation. Subscribe for some horticultural paper, and when convenient, join a Horticultural Society. It will pay you every time. Send your orders direct to your nearest reliable nursery; or, better still, go yourself, and rely largely upon the nurseryman's advice as to varieties, &c. It is not the best-looking nursery trees that are the best to plant. For instance, the Minkler, Willow and Roman Stem are poor growers in the nursery, but excellent varieties in the orchard.

THE STATUS OF HORTICULTURE.

BY C. S. ROWLEY, LACON.

The stone age held the world captive a good long while, but finally gave way. Then we had advancements, and this I believe is called the iron age. Steel superceeds iron as an improvement, and in connection with steam was until recently the universal motor of the world. But electricity is stepping in now, and ere long we confidently expect to see it take the place of steam. Away back in the history of the world, Galileo was imprisoned for declaring the earth moved on its own axis. To make such a statement at that time was the rankest heresy. Ignorance, and what was worse than ignorance alone—superstition—barred the door to every advanced idea. Those were called the "Dark ages." So we see, by reading history, the world has not only had its stone age, its bronze age, its iron age, but also has had its dark age.

Among the great improvements made of late years, we could name many things which, had they been merely hinted at in the old dark age in which Galileo lived, the unlucky heretic who dared to utter them would have been torn in pieces for his audacity.

Thus we see that the world's history has been progressive, step by step, up to the present time. The history of horticulture is written on the same plane. Think of the olden times, at the close of the last century, when a China Rose brought the great sum of $2,500, and Tulips were sold at fabulous prices. Old Nero, that cruel-hearted emperor of Rome, gave one hundred and fifty thousand dollars for flowers to decorate a supper. "Music hath charms to soothe the savage breast," and flowers had charms to please the savage eye of Nero.

The Fleur-de-Lis, or Iris, is the national flower of France, and dear to the heart of every Frenchman. The Shamrock, or clover leaf, is the pride of Ireland. Scotland owns allegiance to so humble a plant as the Thistle. But what the national flower of America is I do not know, unless it may be the modest, sweet-faced little Pansy. These subjects are mentioned to show in a slight degree how the march of horticulture has been kept, and the importance it bears in history, and the affairs of the world. Other things are moving rapidly onward, and the science of trees and plants is in the swim. It is keeping abreast with the times. It is due to the eminent men who have toiled late and early; it is due to their indomitable pluck and perseverance; it is due to their magnificent powers of brain and hand that horticulture is where it is to-day. Does not this show us most clearly that ours is a God-given calling, and therefore destined to succeed, and perhaps beyond our wildest dreams?

Excelsior is our motto. The wilderness must bloom; the desert must be abolished; each thorn must bear its flower, and each flower perfect a fruit. Our forests must be protected, and new ones reared. The millions that go abroad each year for the products of the forest must be kept at home. This great land is broad enough, and has ample resources to produce everything our people need, and some to spare. This business of importing our requisites from foreign countries—and especially the timber and fruits indigenous to our own climate—must be stopped, and instead of importers we should become exporters. That is the direction to which our efforts should be turned, for no other country on the globe can show such grand horticultural results as we can, and no other has the resources that America can boast of. Illinois has done her share in the past, and will do it in the future. Our appropriation from the state is but $2,000 a year for this great and important work. We have done all we could on so small a sum, but it will not be long before the appropriation is doubled, at least we hope so, for this good work must not be stifled for lack of funds, especially in a wealthy state like this, and one where the work we are doing, and contemplate, is so much needed.

Here in the beautiful city of Normal, and within the great center of the nursery business of the state, and close by the "Evergreen City" of Bloomington, we are met to show the people that we are in earnest; that the spirit of horticulture is still alive, and that the Central Society has not been idle, nor lacking in loyalty to its charter. No better time could have been chosen for this gathering than the magnificent month of May—a period just midway between spring and summer, the season of the year when the budding hopes and aspirations of the horticulturists swell with the expansion of the buds and flowers of nature. We cannot look about us for a moment, on any street,

in any doorway, or the yards of the most humble homes, but can be seen the resultant labors of past and present horticultural workers. Wherever blooms a flower; wherever grows a tree, or shrub, or vine, there is the handiwork of some good disciple of "the art that does mend nature." His works go to the palace of the millionaire, and to the humble home of the poor. The bountiful fruits his persevering skill has nurtured into perfection impart the same richness to all; his flowers smell as sweet to the poor, and bloom as beautifully as for the rich.

Horticulture has its advocates and champions all over the world; it leaves its good mark wherever it goes, and it goes everywhere. Civilization and horticulture go hand in hand. The savage nations have no other horticulture save that which nature first bestowed upon them. This was the case with America, and especially so in Illinois. The first settlers found no fruits worthy the name. They were taxed to all their ingenuity to get them started, and even then it was slow and unsatisfying work, because they were so much in the dark. They had not the methods nor knowledge we possess to-day. Their growing intellect taught them to believe that vast possibilities lay hidden in the future, but how to get at them was the all perplexing question. It was this great ambition to unlock the secrets so strongly guarded by nature that perhaps gave rise to the science of horticulture. This desire gave an impetus to experiments by planting seeds, and trial after trial, until finally a surer ground was reached, and budding, grafting, layering, cross breeding, hybridizing, and every other expedient that could be thought of was put into execution. The mind of man is far reaching. It is not possible to subdue the ambition of a thorough horticultural student, for we are all students in nature's school. No man is higher than another, except he gets there by the hardest study and application.

It is only a few years ago, comparatively speaking, when it was the solemn declaration of people hereabouts, who no doubt were sincere in saying so, that these prairies could not raise fruits. Mr. F. K. Phoenix, the founder of the greatest nursery in the world, and he built it up right here in this section, came down in withering scorn on these laconic grumblers, and resented the accusation as a slander on the fairest land that God ever made. Mr. Phoenix was right. The prairies can grow fruit, and they are doing it right along, with splendid success, year after year.

Above all, if horticulture is a failure, from whence comes this enthusiastic Central Society, to say nothing of that grand old *pater familias*—the Illinois State Horticultural Society? Then look at the local and county organizations all over this beautiful prairie state—the prairies which could not grow fruits. This does not look like a failure; not by any means. We are

going forward, and not very slowly either. The movement has been similar to the march of a great army through a wilderness. The pioneers went first. They had literally to fight their way through. Ignorance had set down square on any advanced ideas of such a sort, and superstition was there to oppose them; yet they struggled on. After the pioneers came the sappers and miners, and they made roads and bridges, so to speak, preparing the solid road bed over which the great army is now passing. But where now is all that wilderness which so fearfully opposed the pioneer? It has been made to blossom like the garden. Ignorance and superstition have long since lost their malignant influence, and the grand army is moving steadily onward. We are still wresting the hidden secrets from nature's book, and page after page of its hieroglyphics are being translated every year into plain English, so that he who runs may read; and horticulture, the grand old God-given attribute of all that is good, and high, and noble, is flourishing through all the land.

VEGETABLE GARDENING.

BY MRS. E. A. BLACKSTONE, LACON.

It evidently began with our first parents, and has been preserved through all ages and generations down to the present. Adam began with a wooden plow, while we, in the last few years, have developed into the advantageous Fire-fly. Of the merits, profits and advantages of this yearly comfort, it is useless to speak, but the best ways and means of producing the best yearly product, engages the minds of all lovers of esculent food. A somewhat long and varied experience teaches me that well enriched soil and early planting, with good, clean culture, give the best results. I insist, plant early; with potatoes, very early, the last week in February, if possible; surely as early as the first week in March, or second; a good way (none better) enrich the soil, and plow early in the fall. Mark out and plant early in spring. All potatoes, late and early, should be planted in March. As the best kinds to be used, I should recommend, for winter use, the Snow Flake and White Star; for early use, Early Gem and Early Telephone, the last a new variety propagated from the Snow Flake and Peach Blow. By all means, destroy the potato beetle. The best, cheapest and most convenient recipe I have found is London Purple (one-fourth) and good wood ashes, finely sifted, (three fourths) mixed well, dredged on with boxes of tin holding a quart; I use baking powder cans. The potato bug and drouth are the two great enemies of the potato grower, so plant early, and you head them off, to a certain extent.

Onions, radishes, lettuce, peas, and many other vegetables, give the best result when put in as soon as the ground can be gotten in order. "The early bird catches the worm," so the best

prices and profits catch the early gardener. True, some things require a succession of plantings through the season, but it is true, and most of us are learning the fact, that potatoes are no longer a success in this locality unless put into the soil early. I have found the tin-can irrigation a good one. This consists in a small puncture in the can filled with water, set in the hill or by the plant, being filled two or three times a week. Besides the leakage, the water draws the night dews

One of the best luxuries which so many amateurs leave for the professional to raise, is celery. It is of easy culture, and may be grown in hills successfully, the same as potatoes, the golden self-bleaching being the best variety, only the plants must go into the ground early.

Sweet bell-peppers should be more grown. They are one of the finest fall table relishes we have.

Every vegetable garden should have a bed of mints, summer savory, thyme, sweet marjorum, sage, &c., which add so much to the seasoning and excellence of well cooked food. For the embelishment of tables and garnishing dishes, nothing surpasses the crinkled leaves of parsley. I have found great pleasure in raising water cress, egg plants and many other novelties.

One of the greatest mistakes which many make is in using poor seed. I always plant the largest and best varieties. Potato tubers I divide in four pieces, cutting them lengthwise. The first that ripens should be saved for seed. The earliest and largest radishes should be marked; the finest stalks of lettuce saved; the finest pumpkins; the same of all kinds of melons. These should be of the first. In fact, that which is first is strongest and best in the vegetable kingdom, as well as in the animal. In this age we depend too much on the seed-grower, and are losing in consequence.

It may not be out of place for me to say that we should take courage. We have been passing through a crisis as all countries do, but I apprehend a change in the near future climate, and shall be disappointed if peaches and other fruits do not succeed. I do not like to prophesy, but facts tell. About eight years ago I read a well authenticated article, that in the history of the world every eighty years there were seven years of disasters, storms, earthquakes, cyclones, floods and other disturbances. Every close observer will remember that the last seven years has brought to them scenes which they have not heard of in any previous history of their lives. Last summer was almost a perfect season. The most gouty grumbler cannot complain of the past winter. Be encouraged; let us begin anew; plant trees, dig, hoe, spade, plan and work, as though Illinois was a young Dakota just admitted.

Before closing I want to give a picture of a garden cultivated nearly fifty years ago: Looking, as I now do through infantile eyes into the long ago, a veritable garden of Eden. Drawing the

curtain aside, in the northeast corner we see a large peach tree which the owner called the red-cheeked orange; the cheek was of the deepest carmine, the flesh was the deepest chrome. Now draw the curtain middleway to south, there stands the lemon-lime, looking much like a large lemon in size and color, and were used for the winter preserves. Now shove the rings together; see the beauty of all beauties—the red clingstone. No pen can describe nor artist's brush paint the richness of that tree, as it stood there with its five or six bushels of luscious, juicy fruit. Thus far I have only told what this fruit was to the eye; what must it have been to the taste? Ask the old schoolmates, Mort and Ruben, Clemmie and Frank; they, with me, have not forgotten, nor will forget. Opposite the lime-peach, about middle way, was a plum thicket—the blue damson, the green gage, the big blue horse plum, the yellow preserving, the sloe and a few native wild, stood together, budding, blossoming and ripening. The fruit was large and abundant. A worm in one was a curiosity, and a dozen little heads might be seen examining the rarity.

There were beds for flowers. Such flowers! Were there ever such poppies, such sweet-williams, merigolds, nasturtium? Alas! like the judge's strawberries, they were child's eyes that looked at them. Conspicuous among these was the tomato, cultivated for its beauty, but too poisonous to eat. In the north corner was a raspberry plat, mostly wild blackcaps, some red and a few yellowcaps. To the south a wild strawberry bed. All around next the fence were currants and gooseberries, so abundantly full every season they dried on the bushes. Now and then an old Morello cherry tree grew close to the fence, so full of the ripe black fruit and so superior to many of the new. Here, the birds of every name, warbled and sung, flitting about in tree and bush, building their nests. What a picture of peace, happiness, comfort and prosperity is brought before us. It brings youth back with all its freshness, and we can almost feel the soft touch of beautiful hands that are now at rest. With reverence and sadly we draw the curtain, leaving it hung on memory's wall, which no time can ever erase.

It was my mother's garden.

REPORT OF COMMITTEE ON FRUIT EXHIBIT.

Your committee takes pleasure in calling the attention to the display of twenty-four varieties of apples exhibited by G. W. McCluer of the Experiment Station at Champaign. The apples, which were in excellent condition, we are informed, have been kept in an ordinary cellar without special care.

D. H. Gray,
G. W. Minier,
Committee.

REPORT OF COMMITTEE ON FINAL RESOLUTIONS.

Your Committee on Final Resolutions ask leave to report the following:

First. Our thanks are tendered to the citizens of Normal and vicinity for the hospitality in entertaining the members of our Society.

Second. We give thanks to the press of Bloomington for their judicious and timely reports of our proceedings.

Third. We congratulate this Society on its good fortune in having so many members who are willing to make personal sacrifice to attend the meetings and encourage each other in their generous and unselfish labor.

Fourth. We hope that this meeting and its proceedings will foster orchard planting, floriculture, and gardening, and last, but not least, the planting of fruit and ornamental trees on all our roadsides.

Fifth. To the officers of the Society for the generous and impartial rulings, and labor, in promoting the interests of the Agriculturist and Horticulturist of Illinois.

D. H. Gray,
G. W. Minier,
Committee.

TRANSACTIONS

OF THE

TWENTY-SECOND ANNUAL MEETING

OF THE

HORTICULTURAL SOCIETY OF NORTHERN ILLINOIS,

HELD AT

SANDWICH, JAN. 8 AND 9, 1890.

REPORTED BY

E. W. GRAVES, Secretary.

OFFICERS FOR 1890.

President, - - - - -	A. Bryant, Princeton.
First Vice-President, - -	A. Dunning, Dunning.
Second Vice-President, -	J. V. Cotta, Nursery.
Third Vice-President, - -	F. C. Johnson, Kishwaukee.
Secretary, - - - - -	E. W. Graves, Sandwich.
Treasurer, - - - - -	L. Woodard, Marengo.

List Of Members.

Austin A. B., General Nursery.....Downer's Grove.
Ballou N. E., M. D. Phd.....Sandwich.
Bailey Luther, Gardener.....Sandwich.
Bryant Arthur, General Nursery.....Princeton.
Bryant H. G .....Princeton.
Bryant L. R , Cider and Vinegar.....Princeton.
Christian Jacob .....Mt. Carroll.
Cotta J. V., General Nursery.....Nursery.
Dunning A., General Nursery.....Dunning.
Graves E. W., General Nursery.....Sandwich.
Graves H. C.....Sandwich.
Hanson Henry.....Franklin Grove.
Hazelton W. C.....Forest Glen.
Huber T.....Illinois City.
Johnson F. C .....Kishwaukee.
King John .....Sandwich.
Kleinsmid Geo .....Sandwich.
Mander Edgar.....Sandwich.
Minkler S. G.....Oswego.
Moore J. L., Farmer.....Polo.
Orr A. W., Florist.....Sandwich.
Periam Jonathan.....Englewood.
Piper D. J., Orchard and small fruit.....Forreston.
Prescott C. W., General Nursery .....Marengo.
Rice A .....Rockford, 804 N. Main street.
Seely J. S.....Oswego.
Whitney A. R., Cider and Vinegar.....Franklin Grove.
Whitney N. A.....Franklin Grove.
Woodard L., Pickler .....Marengo.

PROCEEDINGS

OF THE

TWENTY-SECOND ANNUAL MEETING

OF THE

Horticultural Society of Northern Illinois.

THE twenty-second annual meeting of the Horticultural Society of Northern Illinois convened in the A. O. U. W. Hall, at Sandwich, Wednesday, January 8th, at 10 o'clock, with President Bryant in the chair.

The meeting was opened by prayer offered by Rev. D. B. Spencer, after which an adjournment was taken until 2 o'clock, the intervening time being spent in a social way.

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WEDNESDAY AFTERNOON.

Promptly at 2 o'clock the President called the meeting to order and introduced Dr. G. H. Robertson, who delivered the following address of welcome:

DR. ROBERTSON'S ADDRESS.

Mr. President, Ladies and Gentlemen:

The pleasant duty has been imposed on me to extend to the members of your Society in behalf of our people a cordial welcome. It is a courteous ceremony rendered necessary by long usage on such occasions, yet I am confident you will feel assured of your hospitable reception without this formal proffer of our good will. Our little town is somewhat boastful of its hospitality, and may sometimes, in its ambition, forget its limitations. It has welcomed conventions, societies and organizations of various sorts, and of both sexes, and acquitted itself with credit, at least

in its own estimate, but I believe never before has been so aspiring as to present an invitation to an association of such importance and covering an area of half of a great state. It is possible those of you who had to do with the conduct of affairs may have had in contemplation a little needful missionary work. Our town is not yet forty years old and, perhaps, is not able to exhibit the taste, the luxuries and refinements that belong to cities of more wealth and years, yet we venture to suggest that in one of the departments included in your varied and extensive program, arboriculture, we can show commendable zeal and advancement. It is fortunate our trees are mostly deciduous and that you have visited us in midwinter, else you might not have been able to see the town through the shadowed density of its embowerment. I must also conclude from your program that we can boast of one citizen who can raise pears and another who cultivates a garden for the sake of its economy. It is a matter of congratulation that we have one man, who, after a prolonged season's battle with purslane and pig weed, with potato bug and corn worm, with the mild provocations of the neighbor's chickens, and the courteous visits of itinerant dogs, can find, as he carries his dilapidated cabbage into his cellar, that the balance sheet, with a proper entry of the value of his own time and work, is still in his favor.

As to floriculture, we have little to present at this season, except what may be seen nourished in the warm environment of our comfortable homes. There is a well authenticated incident told of one of our people who, having secured a valuable bulb, planted it with great care and watched for its coming with trembling anxiety, and having, in his despair, appealed to a lady friend for counsel, she discovered that the ambitious bulb was sending down its stalk toward China. He had planted it wrong end up. We are reasonably skillful in raising potatoes and soft maples, and have some success with geraniums and chrysanthemums, but if you can give us a little encouragement in our attempts with the cinneraria and ranunculus we shall appreciate your friendly visit. Indeed, we are sure that when we have heard the condensed results of your experiences through the past year, as given in your pleasant interchanges, the balance of the ledger will be on our side.

Horticulture, that gives the name to your association and specifies its ends, both as a science for profit, and as an art for beauty, is the oldest occupation in the world. Our original and venerable ancestor, as we read in the most ancient words, was engaged in it in his earliest years. He was placed in a very beautiful and extensive garden "to dress and to keep it." As far as we know, he was successful, and enjoyed the work, until, unfortunately, he became too much interested in the *Pyrus Malus*, a tree of which we have here probably the most extensive cul-

tivators in the country. His experiences in this direction were quite different from those of our friends, the Graves'. We are told he quit the apple business very suddenly, and went out to do general farming. He had the largest and, probably, the most refractory and unmanageable farm ever owned by any of his descendants. It is an employment that has its special fascinations, that calls out and disciplines many of the best faculties of the mind, and yields ample returns in enjoyment and material profit. It brings you near to nature, where you can watch her in some of her most secret and loving ways, where you can study her mysterious and matchless work, where you can feel the throbbings of her heart. In the structure of a leaf, in the unfolding and coloring of a flower, an art and a skill are manifest that rival all human effort. How the wealth of her interest and the quickness and tenderness of her sympathy are shown in her ready responses to all your intelligent solicitations. The essential, ultimate secret of your success lies in your intimate acquaintance with her spirit and her hidden processes. How often you have found that you could woo her into most attractive and helpful moods by kind and gentle persuasions, while she turns upon you in wrath, if you would traverse her plans or cross her purposes. God's ways with growth and decay, with tree and leaf, with plant and flower, with the blossoming and the fruitage, are the limitations of farm study, the boundaries of your art, the law of your work. It was accounted as the signal proof of Solomon's superior wisdom that he knew all the plants and trees of garden and field, "from the hyssop that grows on the wall to the cedar of Lebanon."

Horticulture has had its attraction for men in all ages, and the wisest and princeliest have found delight and instruction in its pursuit. The festive and magnificent old monarchs, way out on the banks of the Euphrates, spent their leisure hours on their return from bloody conquests in their hanging gardens that revealed their beauty and shook their odors from the lofty summits of their palaces, the wonder of the world. In such a place can one find the recreation of a passing hour, a respite from weary care, a study and an employment for a busy life. Here the poet can find inspiration for his sweetest song, the philosopher food for his most profound reflections, the devout persuasive call to the most profound worship.

Were we to press the subject to its limits, we might recall the fact that the gardens of earth wrought into forms of beauty by human hands, with their stately trees, their cool, shaded bowers, their placid waters flowing along banks robed with green and fragrant with flowers, the fruit hanging ripe and golden from many a bough, these Edens of earth are the types and the prophecies of all that is bright and beautiful in the land beyond the flood. It has already been sufficiently indicated that horticul-

ture is both ancient and honorable. Pursued as a science it is a most useful industry, enlarging the number and improving the quality of those products of the earth that add immeasurably to the satisfaction and comfort of human life. As an art it cultivates the taste, refines the sensibilities, and educates the spirit in its higher realms of grace and beauty. It is a higher department of agriculture, requiring a special training, a more careful study. The luscious peach, the juicy apple, the strawberry that in its exquisite flavor suggests the utmost limit of excellence, may not afford the solid nourishmentof the wheat loaf, but they enlarge the range of human enjoyment and give life a new interest. The pansy, creeping low on the ground, its flower looking up into your face as if in recognition, the climbing clematis, with its exquisite shading and delicate beauty, may not fill the place of the plain corn-dodger in an hour of hunger, but they thrill the spirit with a new joy, and reflect upon the inmost soul their own colorings of beauty. They speak a new language, and tell of the far off realms of beauty, after which we all yearn. Horticulture, the science and art you pursue, like music, like painting, like architecture, indicates in its advancement the march of civilization. In its continued and wonderful achievements, it is contributing to the enlargement and wealth of human life. Each fruit made choicer or more plentiful as a luxury for our tables, each flower made more perfect by your skill, each shrub and tree that shows a more graceful sweep of its boughs, or a richer foliage under improved cultivation, touches a higher range of sensibilities, reaches purer and better impulses, expands the meaning of life. First in the order of things must come the prime necessities of existence, and next should come its finer equipments, its more elegant adornments. There is a natural hunger that must first be satisfied, but there yet remains a hunger of the spirit that yearns for a better nourishment. In these surroundings and embellishments of life, secured to us by your skillful, patient work are we cultivated into a higher appreciation of beauty, and the chords of our spirits attuned to higher harmonies.

As leaders in this department of the world's varied activities, as captains in this division of the great army of progress, we bid you welcome. This earth that waits for man's coming grows fairer as you go and yields choicer products from its bosom, Nature is exhaustless in her resources, magnificent in her riches, and bids the touch of skillful fingers to unlock her treasures and reveal her unrivalled loveliness. Her flowering and her fruitage to-day are but the prophecies of what she will disclose in the coming years, when your persuasive caresses have tempted her to fuller revelations of her boundless possibilities.

If you can stimulate us to a higher ambition in this line of effort, if you will leave us some word of truth that will help us

in our work, your presence with us will have brought its full recompense. Again, as the representatives of Northern Illinois in this mission of love and faith, in behalf of the city of Sandwich and its surrounding population, I bid you welcome.

The President responded briefly in behalf of the Society, after which Professor Cook read his paper entitled

HORTICULTURE IN SCHOOLS.

Ladies and Gentlemen:

I live in a city whose motto is "*Urbs in horto*," a city in a garden, but fortunately my dwelling place and the school with which I am connected are in the garden part of it.

With us of the annexed portion of Chicago, the motto might more appropriately be, "*Hortus in urbe*," a garden in a city. Horticulture and the schools are in close proximity in that city whose motto is not an unapt one. The present paper is only incidentally written for this occasion. It is rather the product of an idea changing to an opinion, and then to a firm belief after an experience of twenty-one years in high school teaching.

Our schools can and ought to have a more practical scientific side than they have presented to the public in the past. The schools absolutely need an experimental field. Horticulture, like all other occupations that would be in line with the march of progress, needs experimental development. These remarks are not addressed to those teachers who *know* that they already know all there is to be known in regard to the improvement of the schools, nor yet to those market gardeners who will not permit themselves to understand the difference between a cucumber and a pickle. They are addressed to this body of earnest men and women whose very presence attests the fact that practical improvement will be heartily welcomed. They are addressed to a class, of whom Francis A. Walker says in an article in the *Princeton Review*, "they are unlike the cultivators of the soil in any country of Europe except Switzerland, and perhaps Scotland: they have at no stage of our history constituted a peasantry in any sense of the term. The actual cultivators of the soil here have been the same kind of men precisely as those who filled the professions or were engaged in commercial and mechanical pursuits. Of two sons of the same mother, one became a lawyer, perhaps, or a judge, or went to the city and became a merchant, or gave himself to political affairs and became a Governor or went to Congress; the other stayed upon the ancestral homestead or made a new one for himself and his children out of the public domain farther west, remaining through his life a plain, hard working farmer. And those who have come to us from foreign countries have caught the time, the step, and the spirit of the

national movement with wonderful ease. As recruits received into an old regiment with veterans behind, before and on either side, with examples everywhere of the right way of doing things and breathing atmosphere surcharged with soldierly instincts, are soon scarcely to be distinguished from the heroes of ten campaigns; so the Germans, the Scandinavians and though in less degree the Irish and French Canadians who have made their homes where they are surrounded by the native agriculturists have become in a short time almost as good Yankees as if they had been born upon the hills of Vermont." They are addressed to the fathers and mothers of our school population, to the foster parents of Horticulture in our State. What can be more appropriate than that the children of such parents should be wedded and dwell together in harmony under the same vine and fig tree? How can such a desirable union be brought about? It can be, but before answering the question practically and in detail bear with me a few minutes for a rapid survey of the tendency of past and present thought bearing on school matters. Bacon says, "*Ars est homo additus naturae*," which may be freely translated "Art equals nature plus man." He also says, "A gardener takes more pains with the young than with the full grown plants; and men commonly find it needful in any undertaking to begin well." "The school is a workshop of humanity" writes Comenius, "it is to bring man to the ready and proper use of his reason, his language and his artistic skill." Milton would have children "turn from the verbal toils to the study of things." We of modern times have begun the study of things, but not yet as practically as might be. Education has become very general, therefore fashionable, so far good; but education turns its back upon the farm and factory, in that far, bad. Educated men crowd into professions, pulpits and politics, and hurried on by the desperate scramble of the many for existence, too often turn out demagogues, swindlers and thieves. So what with the bustle and excitement of these lightning times and the fashion set by educated young men, the farm and factory fall into dishonor; for thirty years the tendency of population has been from the country and towards the great cities. Statistics show that occupancy of the public lands, under the homestead laws, has almost ceased, while the great human herd made up of educated adventurers, of honest, but improvident laborers, of the aimlessly idle, of the vicious vagabonds and the villainous tramps crowd desperately towards the centers of population as if, as Cicero says, "To die in a body were better than to live in quiet apart." The schools must do their share in turning this tide. In these days farming demands brains and in the south and west, industrial enterprises offer the largest returns for labor scientifically directed. It is the duty of the thoughtful farmer and the thoughtful teacher to join in a cry against the idea that education and industrial pursuits are uncon-

genial and that educated men must perforce squeeze themselves into overcrowded professions. There is a demand for educated gardeners, farmers and manufacturers. They are needed primarily at their homes and at their work and then in the legislatures of their respective states; and too, though it might be humiliating to them, they are sadly needed in our National Congress.

These practical men, farmers and gardeners, need a practically scientific education. They need to study the forms of animal and vegetable life. In a word, Biology. This comparatively new subject, which after three centuries of preparation in physics and chemistry has been fully reached by the scientific mind only during the past fifty years, is now beginning to be realized in its full import in our system of higher education.

Biological chairs have been founded and laboratories and schools of biological research have been established in connection with several of the old European Universities. And although we in this country have had chairs and schools and museums of natural history, yet the provision made for biological study in the organization of the Johns Hopkins' University at Baltimore marks a decisive step forward in the educational treatment of this important subject, but it is not alone at Johns Hopkins' University, it is not alone in colleges and high schools that this subject can be taught, but also it may profitably be taught in the common district school and in the every day life of the child.

The insects, and the lower and higher forms of life, that are destructive to agricultural and horticultural products, are legion, unfortunately so, but their insect enemies are also many, and to study both friends and foes is the province alike of the college and the common school. The children must be allowed to retain their original love for all forms of animal life, in so far as is consistent with their safety. The unnatural repugnance to a slug or a snail does not exist in babies, nor children rightly brought up. Unperverted children are naturally fond of all the lower forms of life. What is easier and more delightful, then, than to guide the child-mind in a channel of observation that shall lead him to study nature as he himself finds it?

This feeling of fondness for animal life should be cherished and encouraged, and made available as an impulse in early study. Children, at the home and in school, from babyhood to manhood, have received more or less of false impressions, and one of them is dread of so small a thing as the larva of a codling-moth emerging from a bitten apple. A baby will place his tiny finger upon it, and laugh to see it curl up. He would also pat a rattlesnake upon the back, and laugh to hear its rattle. Here, evidently, teaching is needed. Dread of the deadly serpent must be inculcated, and a natural curiosity in regard to living things must be rightly guided, a task for both mother and teacher. "The difficulty for the teacher in this case," says the editor of the *Popular*

Science Monthly "is not real or intrinsic in the conditions of the case; but, as we have had occasion again and again to notice, it comes from the stupid ignorance and fussy meddlesomeness of parents, who bully the teachers at every deviation from the 'horrid grind' of book lessons and recitations in the schools. The fact is, if we ever get the study of nature in the schools, it can only be by breaking down the superstitions by which they are dominated; the deadly order by which nature is kept out, and by a larger recognition of individual aptitudes, and much freer opportunity for the observation and study of natural objects."

In this connection, it is well to remember that the average child has what Martin calls "the only absolutely necessary faculties for the scientific investigator," viz.: "love of his work, perseverance and truthfulness." If the child has a mind capable of making an observation, and retaining the fact, the garden and the farm give him unlimited opportunities. His field of study is as wide as God's animate creation, nor need the child nor the man be an original thinker in order to get good out of a course of study that *can be formulated and practically applied* in our schools, by a series of observations and experiments upon natural objects supplied by the farm and garden.

As Prof. Martin, of Johns Hopkins' University, says: "That an army to attain its best success needs, indeed, that every man be brave and loyal; but it is by no means requisite that every soldier be a Brigadier-General. So in the army of science there is place for soldiers of all ranks and capabilities, and at any rate we know this, that nature reveals her secrets, which are her rewards, on no system of purchase or favoritism. What a person deserves, that he gets. Every drummer boy who enters her service carries the marshal's baton in his pocket."

A course of study that shall start with the drummer boy of the district school, and end with the field-marshal at the head of the scientific department of a university, is the dream of the present, the reality of the future.

Botany, as taught in the better high schools, starts with the planting of the seed, and watching its development by observing the changes as it germinates and grows, sections being made, and microscopical examinations *conducted in the class room in all stages* of its growth to the mature leaf and hard woody fibre. Plants are analyzed, and all plants from which seeds can be gathered are available for class use. In a city, where can a sufficiency of plants for class use be obtained, if not in the garden and orchard? I believe that the future will develop the fact that a school in which botany is rightly taught, must have access to the garden.

The simple analysis of plants is elementary work on which pupils could be profitably employed a part of the time during their seventh and eighth grade work, or at the ages of twelve to

fourteen, thus laying the foundation for a more extended course in flowering plants than is now possible in the high schools, and giving more time for microscopic work, thus allowing us of the high school to go on with Cryptogamic's Botany, or to build the basement story of the structure, above which would come the elaborate experiments in cross-fertilization, &c., of the agricultural college, and the original lines of investigation of the scientific department of the university, making a super-structure that would be a national blessing. Horticulture can furnish the school with the plants, and the school in turn would yield her best thought for the benefit *of the garden and the farm, and higher and better* than all, the minds of our youth would be drilled to think consecutively, to draw logical conclusions, and to be better and more useful citizens.

Parallel to this course in botany, is another, in which the reciprocal usefulness of school and garden is equally apparent. Zoology, the study of animal life, can and ought to run parallel to botany, the study of plant life. The following is a course of study for seventh and eighth grade work which can be practically employed here in Illinois. Such courses have already been made for those who live upon the sea-shore, and in some respects, perhaps, the sea-side schools have the advantage of us; but available specimens are in abundance about us for guiding the child-mind and creating a habit of observation. The prairies of the west furnish an abundance of animals, as of plants. The thing for Young America to do is to observe what is going on around him, whether he live upon the desert, the prairie, or the sea-coast. But, in order to lead pupils, the teacher himself must be equipped, and must have prepared his work for the class. The questions of each recitation must be naturally led, from the simple to the complex; the recitations must be naturally arranged, and the course of study must follow the same law. This kind of questioning is the peculiar characteristic of the true science lesson. Each question, each recitation, each new topic, must be an important part of one complete course of study.

Let us begin our study of animal life in the seventh grade with the common earth-worm, first noticing its external characteristics, and drawing it in parts, and, as a whole, using it as a topic for oral description by each member of the class, closing the recitation by a talk to the class in regard to its habits, under what circumstances it is beneficial, and when injurious to vegetation, of course bringing out the fact that it is a strict vegetarian, not particular whether its morsel of food be dead or living vegetable matter, whether its meal comes from the embryo shoot of a Canadian Thistle seed, or a young seedling turnip or cabbage. I think that in the common school about five recitations can be profitably spent in this bit of fish-bait. Finally place the animal, together with five or six others, in a tin can well packed with

earth, and watch him dig. Then leave him for future observation.

I have described somewhat in detail this first work. The recitations should be conducted throughout the course on quite a similar plan. First, open and draw the animal for correct form and relation of parts to the whole, then talk about him getting the ideas of the young observers, and finally, a summing up of the class observations by the teacher, and his statement of its habits, the whole to be reviewed and written up by the class in after-recitations.

Next in the course is a bivalve shell, either a fresh-water clam shell or an oyster shell. We will get both, if we can, and compare them. Notice, it is the shell, and not the animal.

Next in order is the living snail, then the snail shell, followed by all the shells the pupils can bring into class, arranging them, and making a simple classification.

The next available animal comes the cray-fish; or, as he is frequently called, the craw-fish. Study him as minutely as the age of the yôungsters will permit, and group around him as a memory nucleus, the crabs and lobsters.

Next comes the locust, or a common grasshopper, the first in the order of insects that we study.

What a field of vast research here opens up, only the salient points of which can be noticed by our young observers! Insects destructive to garden plants can be taken as specimens through a long list, spending one or two recitations upon each, the order being locust, beetle, butterfly, moth, and during the course at least one, as, for instance, the common cabbage butterfly, must be carried through the process of transformation from the egg to the larva, the pupa and the imago. Kept through the winter in a warm place, the butterfly will emerge very early in the spring.

Never shall I forget the surprise and satisfaction with which a class observed the unexpected appearance of four or five little ichneuman flies coming from a little round orifice in the back of a pupa of the cabbage-butterfly. We had preserved several chrysalids late in the fall, and in the latter part of February the butterflies had commenced to make their appearance, when the class were treated to this ocular proof that insects may prey upon each other.

The study of the locust would include a few of the common varieties of the grasshopper and cricket. Under the beetles we would include the common June beetle, potato beetle, the pea and bean beetle, and the striped squash beetle. Under the head of butterflies and moths, we may use in class work, besides the cabbage butterfly, the codling moth and the five spotted hawk moth, the progenitor of the tomato worm. Next in the course comes the fly and the bee, and finally a general classification of insects.

Our pupil may now be said to be prepared for good and thorough high school work, in which the microscope must begin to play its important part. Parallel to the high school work in Botany and Zoology would come a course in Chemistry, in which the poisons used in the battle against insects would be studied and their method of application brought out.

A pupil thus trained in his early years has powers of observation which is now almost unknown, even inside our college walls, but can such training be done with the school divorced from their natural companion, the garden? The schools need the experimental garden. May the time soon come when it will be truthfully said that the garden needs the school.

DISCUSSION.

Prof. Forbes—Thought the paper a very good one and paid a glowing tribute to W. C. Flagg; referred to him as being very instrumental in the organization of the several Universities in the several states of the United States, and that he was a horticulturist to whom we might all look back to with pride. Said he thought by asking for the natural sciences to be taught in our common schools we would get them, and that they were certainly worth the asking. He had always been successful in his demands on the Legislature in that direction, generally getting what he asked for. Anything that brought these matters up for discussion before the people was a grand good thing.

Mr. Hammond—Commended the paper very highly and considered that our common schools lacked the proper instruction on horticultural subjects.

President Bryant—Thought the subject of horticulture was much neglected in our common schools, and that it should be agitated and brought before the people for their consideration, which, if properly done, something would be accomplished in that direction.

SYNOPSIS OF RECENT WORK WITH ARSENICAL INSECTICIDES.

BY PROF. S. A. FORBES.

When, in 1885, I began work on the arsenical poisons for the codling moth and curculios, these insecticides had been already before the horticultural public for several years, but not a line had been published in the nature of a full report of precise experiments, and no one had as yet acted on the idea that elaborate and exact experimentation was necessary. To throw some Paris Green

or dissolved arsenic on a tree; to observe at the end of the season that the fruit was less wormy than on trees not so treated; and to report the result in this vague, general way, seemed to satisfy the workers of that day. Parallel with my own first work, however, a similar, but smaller series of precise experiments was made during the same season at the New York Experiment Station, the general result in both cases going to prove that at least seventy per cent. of the loss commonly suffered by the fruit grower from the ravages of the codling moth, or apple worm, might be prevented, at a nominal expense, by thoroughly applying Paris Green in a spray with water, once or twice in early spring, as soon as the fruit is fairly set.

Since the conclusions of my report were published, as Bulletin No. 1 of the office, and also as an article in my fourth report as State Entomologist, a number of Agricultural and Horticultural Experiment Stations—organized under the operation of the Hatch Act—have taken up the subject of the application and utility of the arsenical insecticides; have experimented carefully in the scientific spirit; and have reported the results of their work with a fullness and system which enables us to discuss them in comparison with each other, and with those of earlier work. As the usefulness of these insecticides is undoubtedly the most important, purely practical subject now before you, I have thought I could do you no better service at the present time than to summarize for you the results of this more recent work, so that all might see just what has been accomplished, and what remains to be learned hereafter.

THE COMPOSITION OF THE ARSENITES.

The poisonous nature of these substances makes it important that all should know just what they are. Two recent analyses made in the Minnesota and Vermont Stations give the composition of unadulterated Paris Green and London Purple. London Purple is essentially composed of arsenic and lime, and Paris Green of arsenic and copper oxide. In the former, we may say in general terms, that the arsenic ranges from forty to forty-five per cent., and in the Paris Green from fifty-five to sixty; while the lime in the London Purple varies from twenty to twenty-five per cent., and the copper oxide in the Paris Green averages about thirty per cent. The other ingredients of these substances are of no horticultural interest. Of the various advertised insecticides, slug shot and the so-called peroxide of silicates are perhaps the most widely known. These have been shown by the above analyses to depend for their efficiency almost entirely on about one and one-half per cent. of arsenic, mixed with plaster of Paris in one case, and with land plaster in the other, the arsenic being sometimes present as such, and

sometimes as Paris Green. These substances are about the equivalent of a mixture of two pounds of Paris Green to a hundred pounds of plaster.

COMPARATIVE ADVANTAGES OF ARSENICAL POISONS.

It is now generally admitted that a solution of white arsenic is so much more liable than London Purple or Paris Green to injure the foliage, even of the apple (varying in the gravity of the injury according to circumstances not yet well understood), that it is no longer recommended for this purpose. Its only advantages are cheapness and convenience of application, since it does not require stirring, but the London Purple costs no more. Mr. Gillette, of the Iowa Experiment Station, believes from experiments made this summer, that white arsenic, if stirred up in water and applied while fresh, before solution has taken place, is much less liable to injure the leaves.

It is commonly known that London Purple is more convenient of application than Paris Green, on account of its greater fineness and lightness, and it is also decidedly cheaper; but Cook of the Michigan Station, and Gillette, of Iowa, are quite of the opinion that it is more caustic to vegetation. Weed, of Ohio, on the other hand, considers it less likely to scorch the tree, as stated in his Bulletin No. 3, issued in May of last year; and Popenoe, of Kansas, finds no great difference between the two. My own experience has gone to show that Paris Green is preferable in this respect. Doubtless, further careful experiments on this point will be necessary, carried out with reference to varying conditions of tree, weather, season, and time of day.

MIXTURES AND APPLICATION.

These poisons, as is well known, may be applied either dry or wet, the advantage of the latter mode being, according to Riley, especially evident in dry weather. The poisons may be, also, much more cheaply applied and quickly prepared with water than with any dry diluent. Riley advises adding two or three pounds of starch to each barrel of the water mixture, (to promote its adhesion to the surface and to assist in the suspension of the poison in the water). He also thinks that sifted wood ashes stirred in with the poison lessen its caustic action on the leaves.

Dry poisons are to be preferred in rainy weather especially, because they may be applied without heavy apparatus which it would be difficult to drag through the field when the ground was soft. Dr. Riley also believes the dry arsenites much less liable to injure the foliage. Flour, he finds the most satisfactory diluent, having the advantage of adhesiveness, but being expensive, it may profitably be mixed with one third wood ashes.

Road dust is a poor substitute. Various other adhesive substances may be used advantageously, especially in wet weather, dextrine, gum-arabic, slippery-elm bark, or rosin, about two pounds of either to twenty-five of the poison mixture being a good average.

Gillette reports experiments intended to test the difference in effect of a fine or coarse poison spray. He finds little difference, so far as injury to the foliage is concerned, between a fine spray distributed with a Nixon nozzle and a solid stream thrown with force, provided that in both cases the leaves be equally moistened. Doubtless a slight moistening can be more equably distributed as a fine spray than in coarse drops.

STRENGTHS OF MIXTURES.

Riley finds the proportions of Paris Green to the *dry* diluent, whatever that may be, to vary from one in twenty to one in thirty-five, and recommends about one in thirty as efficient. Of London Purple he advises the use of about one pound in forty-five, the diluents being fifteen pounds of wood ashes and thirty of flour, with a little less than two pounds of some adhesive substance.

Cook uses for the apple, cherry and pear one pound of London Purple to 200 gallons of water, but finds this too strong for the peach. If the application is repeated, he would then use one pound to 300 gallons. For plums he does not now use London Purple at all, but would apply Paris Green, one pound to two or 300 gallons of water. For the peach, only Paris Green is applicable, and this in strength no greater than one pound to 300 gallons of water.

Gillette, of Iowa, recommends for dry application one pound of the arsenical poisons to fifteen of land plaster or plaster of Paris. His wet mixture advised in 1888 was one pound of London Purple to 100 gallons of water as a maximum for apples, and one to 160 as a minimum. Of Paris Green he would use for apples one pound to 120 gallons as a maximum, and one to 180 as the minimum, but in 1889 he reduces this minimum to one to 160. For the plum he recommends Paris Green in proportions varying from one pound to 160 gallons of water, to one pound to 200 gallons. If weaker than the latter ratio he believes that heavy dews or light rains would compel repetition.

In his cherry experiments for the destruction of the curculio, Weed, of Ohio, in 1888, used one pound of London Purple to 100 gallons of water; and for the apple one pound of London Purple to 100 as a minimum, and to 130 as a maximum, Paris Green one pound to 100 gallons. In 1889, he found one pound of London Purple to 160 gallons of water effective for the cherry.

Jabez Webster, of Centralia, as reported in the Ohio Experiment Station Bulletin, observed that one pound of London Purple to 100 gallons of water was too strong for some varieties of apple, and that it would kill the peach or plum. One pound to 160 gallons he considered safe for these latter fruits, and efficient if twice applied.

Of the dry application Riley finds one pound of Paris Green to thirty of the dry diluent as efficient as the stronger mixtures.

APPARATUS.

In the College Bulletin, No. 53, published in 1889, Prof. Cook especially recommends as a cheap and excellent pump, a brass hand force pump, sold for $2 by Mr. J. K. Compton, Leslie, Mich., too small for orchards, it serves very well for a few trees or garden use. For a large orchard he says, in 1888 that he knows no pump comparable with the Victor Field Force Pump, a geared machine running by horse power, and capable of being attached to the hind wheel of any wagon. This pump costs $30, and is made by the Field Force Pump Company of Lockport, N. Y. Their smaller pump, the Perfection, selling for $12, is practically known to many of you. Both these pumps keep the mixture stirred automatically by pumping back a small stream into the barrel through a separate tube. Cook rejects the Cyclone Nozzle so generally recommended by the U. S. Department of Agriculture, because the spray is not thrown with sufficient force. He recommends, particularly, the Nixon Nozzle, and the Graduating Spraying Nozzle sold with the Field Force Pump.

Dr. Riley describes at length and figures, 1887, in a bulletin, entitled "Our Shade Trees and their Insect Defoliators," the apparatus used by the Agricultural Department in their experiments, and especially recommends, on another page, the Nixon Nozzle as being better adapted to very high trees than their Cyclone pattern. All speak of the Nixon pumps as thoroughly well made and serviceable. At the Ohio Station, Weed has found the "Perfection" pump, already referred to, worthy of special mention. The "Climax" pump, of the Nixon Company, he finds a good practical machine. Gillette, of Iowa, says of a pump sold by W. M. Johnson, Wilmot, Ohio, for $2 and $2.50, that it is a very satisfactory instrument where light spraying is needed, as in greenhouses or on low out-door plants and bushes. The Victor pump, already mentioned, does excellent work by horse power for extensive operations as in large orchards. It will spray one side of a row of trees as fast as a horse can walk, though if the trees are large, it may be found necessary to go twice on each side. The graduating nozzle is to be chosen instead of the "Boss." The Nixon field machine, he has found similarly serviceable for work on a large scale, and their barrel machine he considers the best he has ever tried for spraying

large gardens, and orchards of medium size. The best nozzle tested by him is the common Nixon, and he mentions also the "Pacific Cyclone Spray Tip," highly recommended by orchardists in California.

TIME OF THE YEAR.

Cook insists especially upon the point that care should be taken to postpone the spraying until after the blossoms have fallen, in order to avoid poisoning bees and other useful insects which visit the flowers. He thinks, also, that less damage has been done by the arsenical insecticides when applied in May than when used in June and July. In late application, he consequently reduces the strength.

REPETITIONS OF SPRAYINGS.

Cook remarks, with respect to apples, that if no heavy rain follows, one application should be sufficient, but if it does, especially if the trees bear sparingly, it will often pay well to spray a second time two weeks after the first. He doubts if a third spraying is profitable, even after heavy rains.

Popenoe made, in Kansas in 1888, some elaborate experiments designed to test the benefit of repeated spraying. An average of his percentages drawn up from ninety-five trees showed a gain of only three and two-tenths per cent. by a second spraying made nine or ten days after the first.

TIME OF DAY.

All that mention the matter are agreed that the best time to apply the dry poisoning is early in the morning, when the plants are still wet with dew. Dry and windy weather are unfavorable to an even and economical application. The *wet* poisons, on the other hand, may best be distributed in the afternoon, or at least after the dew has disappeared. Dry weather is most favorable for these.

EFFECTS ON THE TREE.

Apple. The exceedingly variable action of the arsenites upon the foliage of the trees treated with them has led to a variety of experiments to determine, if possible, the conditions governing this matter. Prof. Cook, for example, sprayed last June, fifteen apple trees, and estimated several days thereafter the amount of leaf injury exhibited. Only three of these trees were noticeably hurt, and these were very badly scorched, the mixture being a pound of London Purple to a hundred gallons of water, applied late in June, a rain following the next day.

By far the most elaborate study of this subject reported by any one, is that made by Popenoe, of Kansas in 1888. With a view

to determining at once the comparative effects of London Purple and Paris Green mixtures of various strengths, and also the resisting power of the various varieties of apple, he treated in May, 1888, no less than four hundred and sixty-eight trees, spraying sometimes once and sometimes twice; his London Purple mixtures being a pound to sixty-four gallons of water and one pound to 128 gallons, and the Paris Green preparation varying from fifty gallons to 320 gallons to a pound. Careful estimates of the foliage destroyed were made for each tree by the same observer at the same time. From his tables I collect the following general results: In the first place the Winesap was worse affected of the eight varieties sufficiently tested, the loss averaging twenty-eight per cent. of the leafage on twenty-four trees of that variety. Then came the Gilpin, with twenty-two per cent., the Talman with fifteen per cent., the Johnson with twelve, the Yellow Bellflower eleven, the Huntsman ten, the Wagener nine and the Janet eight. Eighteen trees treated with the weakest London Purple mixture—a pound to 128 gallons—averaged only a loss of twenty-five per cent.; while twenty-seven trees treated with a mixture of twice that strength lost eighteen or nineteen per cent. of their leaves. The damage by Paris Green varied from seven per cent., where a pound to 320 gallons was used to twenty per cent. where a pound was used to eighty gallons. A second spraying rarely increased the damage materially. As between Paris Green and London Purple the difference is scarcely discernible.

By some of these experimenters it is believed that the injury is due to the absorption by the tissue of the leaf of the dissolved portion of the poison—an idea which would explain the greater damage done when the application is followed by rain, unless, indeed, the latter is copious enough to wash away the insecticide.

Gillette experimented in 1888 especially with white arsenic, dissolving it by boiling and applying in strengths varying from one pound to 200 gallons of water to one pound to 800. Notwithstanding the apple leaves received a continued wash of rain, for twenty-four hours three days after the application, the solution of one pound to 250 gallons of water scorched at least one half of the leaf surface and a fortnight later ninety per cent of the leaves fell from the tree; while one pound to 400 gallons scorched the tips and edges of the leaves. In another experiment made this year even one pound to 1200 gallons damaged nearly every leaf.

Plum. Cook sprayed eighteen plum trees with London Purple with the following results: Six treated with one pound to 200 gallons of water were uninjured after ten days; five sprayed with a pound to a hundred gallons were somewhat hurt; three others much hurt; and three more—the spraying followed next day by rain—were very badly damaged, as was also a single tree sprayed July 10 with only one pound to 200 gallons. Weed

found in 1888 a pound of London Purple to a hundred gallons to injure the foliage of some trees, and consequently determined to use thereafter one pound to 200 only. The damage to plums and peaches in Mr. Jabez Webster's orchard has already been mentioned under another head. Gillette's white arsenic solutions left hardly a green leaf upon the plum when used of a strength of one pound to 250 gallons, while one to four or five hundred badly scorched the leaves, and one to 800 damaged them so severely as to forbid the use of this insecticide. Three weeks after application in another experiment, there was scarcely a green leaf left on the plum when the strength exceeded one pound to 600 gallons. Even one to 1200 took off about half the leaves and left the remainder looking sickly and somewhat burned, and a pound to 1500 gallons damaged the leaves quite seriously. One pound to 200 not only destroyed every leaf but killed the small twigs also. Cook, in 1888, sprayed plum trees with London Purple, one pound to one hundred gallons, three times in succession during the month of June, quite without injury to the foliage; but later, as seen above, experience led him to abandon the use of London Purple for this fruit.

Cherry. The cherry is the hardiest of fruit trees with regard to injury by the arsenites, and seems not to have been hurt at all by a London Purple mixture of one pound to a hundred gallons of water, used by Weed in 1888 in his elaborate experiments; and Cook had substantially the same experience in that year. Sixteen cherry trees sprayed in May and June of 1889 were not at all injured, except one treated July 8th with one pound of London Purple to 200 gallons of water. Here the leaves were only slightly damaged. On the other hand, eight trees treated with a mixture of twice that strength, June 7th and 12th, were not hurt at all. The injury noticed seems here connected with the later date of use.

Peach. The peach has thus far proved far the most sensitive to arsenites of all our fruit trees,—so sensitive, in fact, as to make it doubtful if these poisons can ever be used with any success for this fruit. London Purple is certainly so caustic to the leaves as to forbid its use under any circumstances. My own experiments made last June, and reported in "Insect Life," were not decisive, but had at least a temporary value. They showed that one pound of London Purple to 100 gallons of water was somewhat more injurious to the leaves than one to 200, but that both did considerable injury as the result of a single spraying. Paris Green seemed somewhat less harmful, corresponding mixtures of the poison causing a loss of no more than five or six per cent. of the leaves. Cook applied poisons to thirty-two peach trees in June and July, 1889, all the London Purple mixtures, one pound to 100 gallons and one to 200 gallons, doing great injury, as did also water poured off from Lon-

don Purple and a white arsenic solution, a pound to 300 gallons. Paris Green mixtures, on the other hand, of a pound to 100 gallons did but slight injury, and a pound to 200, 250 and 300 gallons did none at all. He concludes that Paris Green only should be used, and this no stronger than a pound to 300 gallons of water. These experiments, it will be noticed, are opposed to the conclusion of Mr. Jabez Webster that a pound of London Purple to 160 gallons may be applied to the peach without destroying the foliage. Mr. Gillette found white arsenic in a solution of one pound to 1,500 gallons of water strong enough to do serious injury to the peach.

Pear. I notice only a single experiment with the pear—one made by Mr. Weed in Ohio in 1888—where a pound of London Purple to 100 gallons of water seemed to be somewhat injurious. The addition of half a peck of air-slacked lime to the mixture had in his experience the advantage of partially protecting the foliage.

The fact may be worth noticing that Cook found the willow uninjured by a single spraying with a pound of London Purple to 100 gallons of water, while maple and elm were slightly damaged by a similar application. In Gillette's experiments a pound of arsenic to 200 or 250 gallons burned the edges of the elm leaves a little. Box-elder was badly damaged by a solution as weak as a pound to 400 gallons, and even one to 500 spotted and scorched the edges of the leaves a little. The latter strength burned badly the leaves of the honey locust, and it somewhat injured the foliage of the silver maple, while one pound to 800 gallons badly scorched the poplar. These results simply emphasize the conclusion that the use of arsenical *solutions* should be abandoned for practical work.

EFFECTS ON INSECTS.

No new observations have been made with respect to the effect of these poisons upon the apple worm itself. The habits of the insect make it, in fact, certain that it can be poisoned only in the young, larva state, before it has penetrated the apple.

Numerous elaborate experiments made by myself last June with the plum curculio, showed (1) that the beetle feeds freely on the various parts of the blossoms of the peach and on the leaf and fruit and on rose blooms and flowers of the snowball and honeysuckle. Peony blossoms, on the other hand, were not eaten at all. Specimens taken in early spring showed that even dead leaves might be eaten as a last resort. Poisons applied to beetles in confinement demonstrated that leaves sprayed but once with Paris Green or London Purple would kill practically all the beetles feeding upon them within ten days. Even a pound of Paris Green to 500 gallons of water, accomplished this purpose, the

only apparent difference between this and stronger solutions being that the former was somewhat less prompt in its action. Weed has also recorded the results of a single observation upon the food of the curculio in the cherry tree, a specimen in confinement feeding for several days upon the green fruit, gnawing pits in the surface. Practical experiment with London Purple on the scale of orchard practice made in Cobden, Union County, by Mr. Theodore Goodrich and my brother, Col. H. C. Forbes, were, as reported to me by the latter, thoroughly unsatisfactory, the mixtures used defoliating. or at least badly damaging, the trees, and not protecting the fruit. It is proper to say, however, that these experiments seemed to me to be premature for the peach, since too little has yet been learned with respect to that fruit, of the kind of poison, the times and conditions of application, and the strength of mixture most likely to yield good economic results.

THE EFFECTS ON THE FRUIT.

Apple. In addition to the numerous results on the apple hitherto reported I mention two, first a brief account given by the Agricultural Experiment Station of Vermont with respect to the unfavorable result of an experiment with London Purple, Paris Green, and white arsenic, a pound of each to sixty gallons of water, applied when the apples were as large as small marbles, and before they had turned downward on the stem. No benefit was derived from the application of the poison, those which had received it being in some cases worse affected by the apple worm than the check trees not treated. It is probable that this result was due to the late period of application.

A much more elaborate and thoroughgoing experiment, or series of experiments, was made by Popenoe, of Kansas, last year, as already described under another head. The product of thirty-two Winesap trees, variously sprayed, is brought into comparison with that of thirteen unsprayed trees of the same variety, with the general result that the greatest saving of apples in any lot was only about half the number which would otherwise have been destroyed, the average saving being about one-fourth of that number. Indeed, the average loss by insect injury on the whole number of trees sprayed with the arsenites amounted to thirty-five per cent. of the entire yield.

These elaborate and careful experiments bring out interesting facts. While the practice of spraying, he says, "is a most important and valuable method in the protection of early maturing fruit, its value for late fruit is lessened by the appearance of a second brood of the larvæ, which have now the freedom of the orchard; and it is after all to these that we are indebted for the greater part of the damage to our winter fruit. The argument follows, that even with the most careful and

thorough work with the spraying engine, the long recommended practices of daily gathering and destroying the fallen fruit, and of trapping and destroying the larvæ and moths by all possible means must still be made use of; and these not only by the interested orchardist himself but also by his neighbors, else is his own work but partly repaid.

Plum. Cook's reports concerning the plum have varied from year to year, his latest announcement being that Paris Green only should be used for fear of damage to the foliage, but that this would probably be ineffective if very frequent rains occur, requiring then, at best, to be so often repeated that cheaper and better protection may be had by the jarring method.

Weed makes a somewhat different report saying, that in 1888 trees sprayed four times with London Purple were almost free from curculio injury, hanging so full that the fruit was artificially thinned to prevent their breaking; while a large proportion of the plums on the check trees were destroyed. Further experiments another year led him to conclude that a sufficiently large proportion of the plum crop can be saved to insure a good yield when a fair amount of fruit is set. Check trees in 1889, for example, did not bring a single plum to maturity, while those sprayed with a pound of London Purple to 160 gallons of water, and again, twice with a combination of London Purple and the Bordeaux mixture yielded an immense crop, the fruit being purposely thinned fifty per cent. on many of the trees, and then being so plentiful that the limbs bent to the ground or broke.

Cherry. Cook reports in general terms a successful experiment with cherries, made in 1888; but Weed in 1888-9 worked much more extensively on that fruit than has any other entomologist. Owing to frequent rains, he made three applications of a London Purple mixture—one pound to 160 gallons of water. Examining 24,000 cherries from the treated trees and as many from those not treated, he found that seventy-five per cent. of the loss which would otherwise have occurred from the curculio had been prevented by the London Purple, followed by a combination of the London Purple and Bordeaux mixture—as already mentioned.

ACCIDENTAL POISONING.

It is well understood by orchardists that the deadly poisons here discussed must be used with a certain caution. The spray or powder should always be thrown with the wind, and it is well to handle the apparatus with gloves, particularly if the soluble poisons are used. Analyses were made for Weed, in Ohio, by the chemist of the State University. Two quarts of cherries sprayed with London Purple three weeks before, were carefully picked and thoroughly washed and the substances washed off were tested for arsenic; but no trace of it could be found. It is worthy of

notice that only a third of an inch of rain had fallen between the last spraying and the picking of the fruit. Weed concludes that spraying may be continued until within three or four weeks of ripening.

Cook has made some careful experiments with respect to the poisoning of pasture under the trees sprayed—some chemical and others practical. First carefully cutting the grass under a large tree which had been heavily sprayed with a mixture of twice the usual strength, he found by analysis that 2.2 grains of arsenic had been sprayed upon this grass, about one-fifth the poisonous dose for a cow and one-tenth that for a horse. In a similar experiment he cut the grass under a tree and fed it to his horse without any subsequent sign of injury. Three sheep were similarly treated with the same result. I cannot, however, endorse the conclusion reached by Cook that these experiments conclusively prove that there is no danger to stock from the poisoning of pasturage. Arsenic is a cumulative poison, and a daily feeding for two or three weeks upon grass which had been sprayed with arsenites might have very different consequences from a meal or two.

In this connection, it may be well to note the poisonous doses of these substances for man. They vary, for arsenic, from one-eighth to one fourth of a grain for a two-year-old child, to one or two grains for an adult, the corresponding fatal doses for Paris Green and London Purple being two or three times as much.

Although not strictly related to my subject, I will not close without calling attention to an important matter with respect to the uses and effects of these insecticides contained in Bulletin No. 10 of the Division of Entomology of the U. S. Department of Agriculture, published in 1887, the subject being "Our Shade Trees and their Insect Defoliators." Particularly interesting, from our point of view, are the differences in effect produced upon different trees of the same species, the various methods described for the preparation and application of the poisons, the elaborate illustrations of the apparatus used, and the comparative notes with respect to the effects of the different poisons under experiment.

BORDEAUX MIXTURE.

The numerous objections to the use of the arsenites in the apple orchard give particular interest to any hint of a less dangerous substitute. The so-called Bordeaux mixture, essentially blue vitriol and lime suspended in water, has come into prominence as a fungicide, and has been lately used in a spray upon trees to prevent the formation of the scab of the apple and the rot of the plum. Its effect to check mildew of grape is well known to horticulturists. Observations made by Lugger, of Minnesota, and Garman, of Kentucky, make it likely that it will be found to have an insecticide value also. Weed, of Ohio,

mixes it with London Purple for the apple or plum, hoping by that means to combine fungicide and insecticide properties in the same fluid, and to accomplish two purposes with one spraying.

LIME.

My own experiments with lime as a protection against the codling moth have already been reported in the transactions of this Society, the result being altogether unfavorable. Weed has made a thorough trial of it as a means of protecting cherries against the curculio, applying the lime wash four times, strong enough to whiten the leaves and fruit, with the effect to save about forty per cent. of the cherries, which would otherwise have been infested, as shown by the condition of that fruit on the check trees. Experiments on the plum gave a similar result. As this was only about half the saving effected by the similar use of London Purple, the method was abandoned.

CARBOLIC ACID.

Cook used a mixture of crude carbolic acid and plaster, a pint to fifty pounds, with apparent success in 1888, and failure in 1889. He seems to believe on the whole, however, that it is as useful as London Purple.

In conclusion, collecting, summarizing and collating the Experiment Station Reports of Ohio, Kentucky, Iowa, Kansas, Minnesota and Michigan, and reports of work done in Illinois, and at the U. S. Department of Agriculture, we find:

(1) That white arsenic *in solution* should undoubtedly be abandoned as dangerous, if not destructive, to foliage, although it may perhaps be used in simple mixture, either dry or with water. If its application be followed by rain; however, it would probably even then take disastrous effect.

(2) There is, as yet, no general agreement with respect to the comparative merits of London Purple and Paris Green, and more experiment will be needed on this point. The weight of the evidence, is, however, to the effect that London Purple is the more caustic, and that certainly it will not do for the peach.

(3) Dry mixtures of the arsenites seem less injurious to the trees than wet, and are to be preferred in rainy weather. They should be applied in the morning, before the dew dries away. The water mixtures, on the other hand, are cheaper and commonly more convenient, and are especially advantageous in dry weather. They may be best distributed in the afternoon. They will last longer on the tree if two or three pounds of starch be added to each barrel. The strengths of the water mixtures vary in the practice of different stations as follows: For the apple, Paris Green in proportions varying from 100 to 160 gallons of water to the pound, or London Purple in mixtures of 100 to 200

gallons of water to the pound; or, if we follow Prof. Cook, 300 gallons for a second application. For the plum, 200 or 300 gallons of water to the pound of Paris Green; or, if London Purple be used—a dangerous practice for this fruit—160 to 200 gallons to the pound. For the cherry, 100 to 200 gallons of water to the pound of London Purple, or 300 if applied the second time. For the peach, London Purple should probably be discarded, and Paris Green used at the rate of not more than a pound to 300 gallons of water.

(4) Reports do not precisely agree with regard to the number of sprayings advisable, Cook spraying twice if heavy rains require, but limiting himself to this number; Weed spraying three or four times in his experiments; and Popenoe finding that a second spraying produced but trifling additional effect. Clearly, here, more experimentation will be required.

(5) Elaborate, but still imperfect, experiments intended to test the resisting power of the tree, scarcely do more than show that great caution must be used in applying the arsenites, and that several conditions, most of them undetermined, influence the effect of the poison on the tree. Indeed, some experimenters have reported that not only trees of the same variety and age treated in precisely the same way, at the same time, may show widely different amounts of injury, but that different sides of the tree, and even different branches of the same side, sometimes show similar differences. With regard to the principal kinds of fruit trees, it is clear that the cherry is the hardiest of all in this respect, and the peach the most sensitive, the plum being, further, more easily injured than the apple.

(6) We now know that the plum or peach curculio can be killed by poisons not strong enough to do serious harm to the tree, whether plum or peach, at least under favorable circumstances. Probably we ought not to go farther than this at the present time. I think that the most important additions to our knowledge on this subject are those which show the varieties of food and the feeding habits of the adult curculio. I ought to add, that even if poisons are found thoroughly destructive to the insect, and safe for the tree, their application may nevertheless be ineffective, on account of the number of repetitions which would be required. A part of the curculios—how large a part has not yet been ascertained—certainly pass the winter in the earth as pupæ, and appear long after the older members of their brood have begun operations on the fruit; it is quite possible, consequently, that spraying must be kept up so long to protect against these late comers as to make it too expensive for the crop, or even to endanger poisoning the fruit when ripened.

(7) Popenoe's experiments seem to show that, however effective for early apples, spraying with poisons will not alone accomplish the purpose for late varieties, since it cannot be used

against the second brood of apple worms. He seems to me, however, to leave out of account the fact that the number of the second brood would be very greatly diminished by early spraying, if this was thoroughly, persistently and generally performed; since, whatever the per cent. of reduction in the first brood, the number of the second must be correspondingly reduced, as it descends immediately from the first. That the cherry and plum may be protected from one-half to three-fourths of the curculio injury to which they are subject, by a use of arsenites which could hardly be considered excessive, seems well settled, especially by the reports of Weed and Cook.

Finally, subjects for experiment are suggested by the partial results already obtained with the Bordeaux mixture, either alone or with London Purple, and with carbolic acid and plaster, a pint to fifty pounds.

DISCUSSION

L. R. Bryant asked in regard to the effects the spraying would have on the apple as it grew larger.

Prof. Forbes—We sprayed eight times and were unable to see that the last brood was any way affected by the late sprayings, and concluded that five times was as good as eight. The right time to spray is just after the blossom is fallen, when the apple is about the size of a pea. The weather, no doubt, has something to do with the injury of the foliage, but have not as yet made any experiments to ascertain what it has to do with it.

Mr. Goodrich—My experience in spraying the peach for the curculio was more negative than favorable. I used London Purple as it did not clog the machinery so bad. I sprayed twice, and when ready for the third time, found that the leaves were dropping badly and did not spray again, there being about as many leaves on the ground as on the trees. The poisons vary in strength and think perhaps the solution I used was a little too strong. Three ounces to fifty gallons I think is strong enough for the peach, as it is very sensitive. My experiment killed considerable of the fruit but enough remained for a full crop.

M. L. Dunlap—The percentage of arsenic in poisons is a very important thing and the compounds used should, I think, be analyzed, so we may know the per cent. of arsenic they contain. I believe we should have them analyzed by some one and stamped so that we will know how to make our solutions the right strength. Paris Green and London Purple may be bought at different times

and at different places, and one never knows the strength his solution is going to be from time to time.

Prof. Forbes—I think the spraying should cease about a month before gathering the fruit, though the boys who sprayed our trees this year ate the fallen apples all through the spraying season and no bad results came from it. I have doubted some whether spraying the peach could be made a success, for the reason the curculio sometimes comes at more than one period of the season. It seems that some fail to transform in the fall, and remain in the ground in the pupa state over winter, complete their growth in the spring and emerge from the ground at a later season than those that transformed at the usual season.

Mr. Orr—What time of day did Mr. Goodrich spray?

Mr. Goodrich—I preferred in the morning after the dew was off.

Mr. Orr—Did not the little drops of water which formed on the foliage from the spraying machine cause little lenzes through which the sun shone and burned the foliage?

Mr. Goodrich—That might be the case sometimes, under some circumstances, but I think the Paris Green did the injury in my case.

Mr. Coe asked Prof. Forbes if he had tried spraying flowers, such as dahlias, etc., with Paris Green?

Prof. Forbes—No I have not. Hellebore is used in such cases. Paris Green should be avoided where children are liable to come in contact with it.

ORCHARD AND CULTURE.

BY J. V. COTTA, NURSERY.

Mr. President and Members of the Northern Illinois Horticultural Society:

The growing of an apple orchard would seem to be such a simple matter that any person of ordinary intelligence might be expected to make a fair success of it, and if a new beginner, or even a person of some experience in this line, should wish to be particularly well informed, he would not only have access to the works of Warder, Downing, Thomas and other competent writers, the reports of our Horticultural Societies, but also the

agricultural press, from which he might draw a large amount of information; enough, it would seem, to enable him to meet every emergency. Yet, after all, such has been the experience of half a century of attempted apple culture—not only in Northern Illinois, but throughout the north and west—that I venture the assertion, that, should any man, from any part of our country east and south of Lake Michigan, attempt to grow an apple orchard in this section, or anywhere north and west of this, though he avail himself of all the knowledge obtainable from the books or the press, he would, in all probability, make a miserable failure of it, unless he be possessed of that practical information obtainable only from those who have wrestled with this problem right here on the spot for a series of years.

Do not misunderstand me. I fully appreciate the merits of the elaborate works of those excellent writers. No other country possesses a better horticultural literature than America does. Yet, notwithstanding all this, those eminent men reasoned and wrote from the standpoints of their own experiences, and had not the practical knowledge of the intricate difficulties which half a century's experience has developed; hence they could not give such advice as a novice out here would need. Moreover, the incalculable damage inflicted by recent test winters, has thrown the problem back upon the experimental stage, out of which we are but slowly emerging.

There are all sorts of theories advanced as to the real causes of the difficulty, while some of the remedies proposed are simply ridiculous. For instance, one writer proposes that the root graft should be planted out into the orchard, where the tree is to grow, so as to prevent the necessity of transplanting, which, he claims, is the cause of black heart. Others advise the planting of the one-year-old tree, which is to be headed back to within eighteen inches from the ground, as a prevention of sun-scald. Others, again, claim that two-years is the greatest age admissable for the planting of a tree in the orchard. Still others claim that the growing of seedling stocks from seeds obtained from the cider mills has gradually deteriorated the constitutional vitality to such an extent, that the whole race of apples has become enfeebled, and is no more able to stand the severity of the climate.

Now, such theories may appear plausible enough, but what are the actual facts? If it be true that transplanting causes disease and death, how does it come that millions of nursery trees that had never been transplanted have been destroyed by hard winters? How is it that the low-headed trees planted years and years ago have perished? And again, how is it that trees which were three, four, or even five years old when transplanted, have, on an average, been every whit as valuable, or as worthless, as the case may be, as any that were set out at the age of two years?

It is claimed, further, that twenty years is about the age at which apple trees cease to be profitable; at this age they should be dug up, and new orchards—previously planted—should take the places of the old ones. Advocates of this theory seem to forget the fact that test winters have destroyed trees of all ages, and under all conditions, both in orchards and nurseries, and no one knows beforehand when the next severe winter may repeat the mischief.

As to seed deterioration, the advocates of that idea cannot prove the statements they make. The fact is, seedlings of the present day are as sound, as robust and as vigorous as seedlings grown fifty years ago, and for use as stocks for propagation, are as valuable as those grown in the days of "ould lang syne," even if they were grown from cider-mill seed. The analogy existing in the laws which govern improvement or deterioration, both in animal and vegetable life, hold good as regards the production of new specimens or varieties, but do not exist in connection with the principles of propagation, as practiced in our nurseries, as compared with the growing of live-stock on our farms.

In animal life we do not propose to graft the body of one individual upon the legs or feet of another, as we do with trees. Nor do we keep our animals, whether thoroughbred, grade, or scrub, out of doors, rooted to the spot, in all sorts of weather, through heat or cold, wet or dry, as we do our trees. You all will admit with me that if we would house or shelter our fruit trees as we do our animals, we should have no more of winter-killing. Such a remedy would certainly be a sure cure for that difficulty.

Why horticulturists will thus beat about the stump in this matter is a thing I do not understand, unless this be attributable, like other short-comings, to the imperfections of the race. But it does seem to me that the lessons of the past ought to teach us the fact that whatever other causes may contribute to the untimely destruction of our trees, the severe winters we are subject to from time to time are the most direct and prominent ones. To prevent recurrences of these is beyond human power; to prepare our trees by proper management to resist their damaging effects is our mission.

No one, who has any experience with top-working such varieties as are not perfectly hardy in this climate, will have failed to notice the remarkable improvement in the capacity of trees thus grown, to resist the injurious effects of hard winters over those grown by the common modes of root-grafting or collar-budding, provided, *always*, the former were worked upon true "iron-clad," congenial stock; and it is my honest conviction that apple orchards can be successfully grown with most of our old, favorite varieties by this means. The past has shown that it cannot be done otherwise; especially as the Russians have disappointed us. Some of these latter, however, will make excellent stocks for

top-working; and so will also some of the Siberians, and between these two races there is no variety of our native sorts but what may be properly mated with some congenial stock. By this means, namely double-working, we practically do away with the "dead line"—if I may use that term—or that belt on half-hardy trees between one and two or three feet above the ground, where the severest injury is always located; and thus, trees are grown, which do possess the hardiest constitution attainable by any given variety.

An essential adjunct to an orchard is a good windbreak on the south and west, partly to protect the trees against excessive cold wind-storms, but especially to prevent the fruit from being blown off by the strong southwest winds of our summer months. Norway Spruce and White Pine being the most desirable trees to plant for this purpose. These may be planted in single rows, with trees eight or ten feet apart, or in double or triple rows eight to twelve feet apart, with trees at same distances in the rows, planted in break-joint style. Belts of trees on the north and east sides of an orchard are not to be recommended, as they would do more harm than good by holding the heat generated by the sun's rays too closely about the trees.

For the orchard site, select, if possible, some elevated and naturally well drained location, but avoid barren hillsides or gravel knolls. Any good corn land will answer. If not naturally well drained, it should be underdrained with tile to the depth of at least four feet. A northern slope is preferable to a southern one, for obvious reasons. Thorough preparation of the ground by deep plowing and thorough harrowing is essential. Level lands should, by repeated plowings, be thrown into ridges, upon which the trees should be planted. Distance between trees, two rods; time to plant, spring.

In digging—no matter how carefully done—trees loose a portion of their roots, a fact which deranges the balance that existed in the structure of the tree. This balance should be restored by judicious pruning as follows: Cut away all forked or close-growing, upright branches and leave but one central upright shoot for the leader; cut this leader back to five or six inches from its base; and select three or four branches—not too close together—to form a well balanced head, and cut these a few inches lower than the leader and remove all other useless twigs. Trees without branches will form good, well balanced tops if headed back to about five feet above the ground. (In subsequent prunings, for three or four years after planting, always remove the forks and prune towards securing an open, well rounded, symmetrical head, by shortening disproportionally tall and straggling shoots and ingrowing twigs.) Make all cuts smooth and close. Never leave any stubs. Cut all bruised and broken roots back to sound wood from below, so the cut surfaces may rest up-

on the ground. The new roots issuing from these cut surfaces will at once grow downward and anchor the tree firmly in the ground.

Plant carefully, in holes large enough and deep enough to permit every root to be straightened out in its natural position. Set the tree not over two inches deeper than it stood in nursery. Work finest surface soil among the roots and when the hole is even full, press the loose soil firmly down with the foot; and if the soil be rather dry pour one or two pails of water in the depression thus made. Let this water soak away, and allow the ground to settle naturally and then fill up a little above the level. Do not omit to lean the stem of your tree at an angle of about fifteen degrees towards the south-south-west, to brace against the prevailing winds, and as a prevention against sun-scald.

Cultivate corn among the young trees for five or six years after planting, then seed to clover, which should not be removed, but be left on the ground as a mulch. Never permit a dense grass sod to take possession of your orchard, for this would mean starvation to your trees. The grass would absorb most, if not all of the moisture yielded by the summer showers, leaving the deeper lying tree roots without nourishment. Trees cannot mature a a crop of fruit and retain their vigor in such a condition. Protect the stems of your trees against rabbits, mice and borers by wrapping them with burlap, wrapping paper or screen wire, which would also protect them against sun-scald. Destroy noxious insects by spraying with Paris Green or London Purple, and on this point consult carefully the reports of experiments which you will find in the Transactions of this Society.

Do not forget to keep up the fertility of the soil by an occasional top dressing of well rotted barn yard manure and wood ashes—if these be available. When you notice that your trees, after coming into bearing, make a smaller annual growth than nine to twelve inches in the main shoots, you may know that they require extra care and the restoration of their waning vigor.

After bearing several crops of fruit—and sometimes even before this—you will notice more or less stunted, half-dead or dead twigs and branches in the inside of the heads of your trees. To retain these worthless branches is a severe drain upon the vitality of trees. Prune these out during mild weather, from November till March, when the wood is not frozen. Avoid cutting off large limbs. A light annual pruning, as advised already, will avoid the necessity of removing large branches. Wounds, over one inch in diameter, should be covered with shellac or oil paint after the surface has become seasoned by contact with the air, say one or two weeks after pruning.

Old trees, which are still fairly sound, but have grown too tall to admit of their fruits being gathered with comfort or economy, may be headed back and renewed at an accessible height. Time

for doing this work and treatment of wounds, same as above. Time for removing water-sprouts or suckers, and for heading back irregular shoots, June.

Now, if you don't succeed in apple culture after following these hints and directions, you have permission to quit the business.

DISCUSSION.

L. R. Bryant—I think when you cut off large limbs from orchard trees the wound should be covered with wax, paint or something to prevent the tree rotting.

L. Woodard—I have found if trees are trimmed at the proper season of the year, the wood will heal over without rotting. If they are cut when the sap will ooze out and keep the end of the wood wet, it will of course rot; and if it is waxed over so the wood does not dry out, it will also rot.

J. V. Cotta—I think if you give the wound time to air-dry before applying the wax, paint, or other covering you will have no difficulty with rotting.

Mr. Kleindsmid—I always make sure to get good roots on my trees and see that they are properly pruned, leaving the ends smooth and making the cut so it will be on the down side.

BEST NEW APPLE, AND BEST WAY TO PROPAGATE IT.

BY D. J. PIPER, FORRESTON.

Mr. President, Ladies and Gentlemen, of the Horticultural Society of Northern Illinois:

As my subject is "The Best New Apple" we should try and find the best way to propagate and grow it. I have been experimenting in growing apples for more than thirty-six years.

I have root-grafted different varieties of the apple with fair success for quite a number of years until 1885, and then came the first draw-back; when I lost some of my root-grafted trees by freezing. We then set windbreaks of willow, lombardy poplar and locust, which are good for the summer season, yet this windbreak did not prevent my trees from freezing. Some years later I visited Mr. Cotta's place and found a good windbreak around his young orchard then in fine condition, but a few years later he lost more heavily than I had in the root-grafted trees. This loss of apple orchards in 1882 appeared to be a general complaint, and about that time I lost both old and young trees, except of the Whitney and Duchess. Previous to the last named

date I had top-worked quite a number of seedlings, most of which froze in the trunks, and the whole tree would die outright.

Previous to that time the idea was that seedlings would stand any amount of freezing, but the winters of '82 and '83 pretty thoroughly settled the point in my mind that we must have something we could rely on, something that had stood the test. On examination we found that the Duchess and Whitney had passed through those two trying winters and had come out as bright in the spring as they had gone into winter the previous fall. Had I taken Mr. Whitney's advice and set all No. 20, I would be much farther ahead with my orchard to-day, as my intention was to re-graft with such kinds as I wished.

I have never lost any of the Whitney or Duchess, neither have I ever lost any kind that I set on those two stocks, but I have lost quite a number of trees where I used the Walbridge for stocks, as they would freeze so badly in the trunks that the whole tree would die. I have left only three Salome out of seventeen worked on the Walbridge, and only one of those is sound in the trunk. Out of forty Wythe I have only about a dozen left that were on Walbridge stock. I have since used the Whitney and Duchess to work less hardy kinds on and find no trouble about the trees being killed by freezing.

I have some Salome worked on the Whitney and they are as fine young trees as can be found. I do not fear of their freezing to death. I have some Salome apples here on exhibition that are as fine apples as can be found, and I care not whether you go to Michigan or to the state of New York to get the specimens. If I had ten thousand barrels of such apples as the Salome they would be ready sale. I claim the Salome is the best new apple we have at the present time, as it will keep a whole year; it is ready for use in November, after being gathered, and is a keeper of the first quality. The Wythe comes next as a first-class apple.

Mr. Hathaway, the originator of the Salome, says he has kept it over the second winter in a common cellar in good condition. Work the Salome on the Whitney and you will have no trouble in growing as fine apples as anyone wants.

I have set in orchard thirty-one varieties: "First Early," a new seedling, the earliest apple there is in Northern Illinois. It is ahead of anything. Astrachan, Excelsior, or Yellow Transparent, are two weeks behind it in ripening. In size it is about as large as Rambo or nearly as large as Excelsior, of better quality than any of our present early apples and a much better keeper; I have kept them one month in fine condition after being gathered. It is a very mild sub-acid.

Of the thirty-one kinds I have set I would not recommend over six for early: Red Astrachan, Excelsior, Yellow Transparent,

Tetofsky, Sweet June and my new earliest of all. Second early, Duchess of Oldenburg, Gravenstein and Strawberry.

Third, Jeffries, this is the best of all the fall apples and is as good as a pear, Shiawassa Beauty, Snow, Maryland Redstreak, Hoss, Maiden's Blush and Victor.

Winter.—Perry Russet, Salome, Wythe, Willow, Grimes Golden, Tallman Sweet and Roman Stem.

BENEFITS OF HORTICULTURAL SOCIETIES.

BY LEN SMALL, KANKAKEE.

How am I to describe the benefits of local Horticultural Societies? If I should say they are social, intellectual, educational, physical and financial, it would almost cover the ground. But if we say that Horticultural Societies tend to improve and strengthen every beneficial trait of character in men and women, we have a truer definition.

Martin's old civil government which we used to study told us that "men are social beings; that society is a necessity; that, without society, government would not exist." Difficulties between men are usually caused by misunderstandings, or looking at things from different standpoints. Intelligence and social acquaintance, does more to promote peace than all the improved means and weapons of war, scientific and ingenious man can produce. The local horticultural organization will bring together people that would never meet under other circumstances; people of every religious faith and political belief. There are but few purposes for which associations are organized that have for their object a field so large, so varied, and one which can be made so interesting to so large a number of people.

No one will deny that Horticultural Societies have done much towards awakening people to the beauties, the benefits and necessities of horticulture. A person cannot be an active member of a live Horticultural Society, and listen to the discussions, without thinking; and, as a noted scientist once said, thought, is the channel through which all knowledge comes. By attending Horticultural Meetings, many persons who never cared much about trees and flowers, have become interested in them, and when a person once begins growing and caring for trees and flowers, especially if their efforts are stimulated by a local society, they are likely to succeed. The members of a local Horticultural Society, by availing themselves of the experience of their neighbors, may be able to save much valuable time, labor and money, as millions of dollars have been thrown away by the purchase of trees and plants unsuitable to the climate and soil.

There is not a county in this State that a Horticultural Society could not be made a success in, if there are as many as three

well-posted, persevering horticulturists to take the lead. Make the meetings interesting, and enough so to insure an attendance; and the best way to accomplish this is to give each and every person who can be induced to attend something to do. From the first meeting, see that every member has some special work to perform. Those who don't take an interest in horticultural subjects, appoint on committees to provide for the meeting or music. Assign duties to each one who is competent, such as studying up and writing a paper on asparagus culture, or any particular variety of fruits, flowers or insects, or on planting, &c.

It is a good plan to have an exhibition of fruits, vegetables and flowers, and it sometimes helps to bring out an attendance to have an occasional basket-picnic meeting, the dinner to be provided by each member bringing provisions in baskets.

A library would be a valuable feature in all local Horticultural Societies, containing a few standard works on pomology, forestry, botany, small fruit culture, landscape gardening, &c. In addition to these, many of the State societies, and other horticultural institutions, will donate their reports.

And don't forget to have a manual on parliamentary practice, and conduct the meetings accordingly. It will give them an appearance of their real importance, and insure respect. A knowledge of parliamentary rules will not be found objectionable. The utility and importance of horticulture requires no elaborate exposition or commendation at my hands at this time and on this occasion.

On motion, Society adjourned until 10 o'clock Thursday morning.

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THURSDAY MORNING SESSION.

The chair called the meeting to order as per adjournment, and the following report was submitted by the Treasurer and accepted, after which President Bryant gave his annual address.

1889.				
Jan.	10.	To balance on hand	$132 71	
"	10.	To memberships	31 00	
Mar.	10.	To A. C. Hammond	50 00	
Jan.	10.	By A. Bryant, per bill		$2 50
"	10.	By J. P. Streeter		4 25
"	10.	By E. W. Graves		31 60
"	10.	By Exchange on Drfts		25
		By balance on hand		175 11
			$213 71	$213 71

Respectfully submitted,
L. WOODARD.

PRESIDENT'S ANNUAL ADDRESS.

It is nearly a quarter of a century since a small band gathered together to organize this Society. They were men full of zeal and earnest purpose, who thought that Horticulture had a mission to perform, in giving to this western world trees and shrubs to beautify the landscape—the luscious health-giving fruits to tempt the palate, and the beautiful flowers to please the eye and refine the taste.

Believing that in union there is strength, they organized this Society, and as students and workers in this cause they felt it their duty to show by their works the faith that was in them.

And right well they wrought, for I do not believe that there is any area of territory in the United States, of equal extent, that is better supplied with trees, shrubs, flowers and the general comforts of life than this District of Northern Illinois.

We may seem to be claiming a great deal for the influence that this Society exerted in the horticultural interests of this country at that time, but you must remember that the Northern Society was a giant in numbers as well as zeal.

We find on record, at one of its meetings, its membership numbered 145, with a score or more on its honorary list. But with such men for leaders as Kinnicott, Ellsworth, Scott, and half a score of others I could name, who have gone to their reward, with twice that number of others who have grown gray in the services, are still with us, what other results could we expect? Coming here when it took resolution and energy to leave their eastern homes, and push out into a new and unsettled country, and face its hardships and privations, they put much of their zeal and vim into their horticultural work, and we are now reaping some of its benefits.

But we, like others, have had our reverses, for there is no industry that has not its seasons of depression and failure. This is so in all agricultural and horticultural pursuits. With the extended planting of the different grains and fruits we have increased the difficulties of their production. Our lands as they become older have lost some of their original strength and fertility.

The soil is filled with the seeds of troublesome and noxious weeds that are hard to eradicate. Insect enemies have increased to a wonderful extent, sometimes destroying the whole crop, so that the person who endeavors to till the soil to-day must use much more judgment and skill to produce the same results than they did some twenty years ago.

Some portions of this state and the west have much greater advantages for growing fruits, especially for market, than we have, but they have their adverse seasons and failures. On the farm and village lot we can grow the hardy fruits and vegetables

that are to be used in the family, much better than they can be bought in the market, in fact with most farmers the supply would be scanty and uncertain if they depended on purchasing it. With us many of the small fruits can be grown for market at a profit near our small towns and villages, and although our present apple orchards are nearly all gone, I feel confident that even now a market orchard planted in this portion of Illinois, using good judgment and discretion in the selection of varieties, and care of it afterwards, would be as likely to pay as any other business venture. But this question of the profit in dollars and cents that we make from our horticultural work is not all that is to be considered.

Is there not great benefit in the increased comfort and pleasure that we take in our homes, when surrounded with pleasant lawns, spreading trees and beautiful flowers, with abundance of health-giving, appetizing fruits in their season, all having a tendency to make life more enjoyable and therefore longer; Is this not *profit* in the true sense of the word? If not, what is it?

The successful maintainance of organizations of the people for legitimate purposes, aid greatly in developing the better traits of human character, as well as the resources of the country. Foremost in adding to the beauty of this earth of ours, also in increasing the love of the beautiful in nature, are our Horticultural Societies. In them we have facilities for systematic and united action.

We are all teachers and students together, each bringing his experience, successes or failures, to add to the general fund of knowledge. Friendships formed here are often of the most lasting character, continuing until the close of life.

Much has been written in our agricultural papers as to what we shall do to keep our boys on the farm.

There is no question that, as a rule, the homes of our rural population are superior to those of any other people. Much of this is due to the respect and esteem that we, as an enlightened people, give to woman. She is intuitively a lover of the beautiful, whether it be in nature, dress or homes. Through her oftentimes comes the suggestion or inspiration that surrounds the home with trees, fruits and flowers. Young people brought up with these surroundings will certainly have a higher sense of true man and womanhood than where these advantages do not exist. If this be true, what nobler work can this Society have than to assist these home mothers to cultivate in their children a love of the good, the beautiful and the true, and thus lead them up to a higher and better life?

During the past year the State Society has secured an increased appropriation which will enable it to extend its work in many directions.

A certain portion of this fund is to be used in experimental work. Results in this direction are as yet not very apparent, as the work was not begun until there was a prospect of getting means to carry it on.

We hope much good will come from this source, especially in the testing of new fruits in the use of the different insecticides, various methods of cultivation and many other matters that need careful work and reliable records. The members of this Society can do much as individuals to help along this enterprise, and I hope that each one will take a special interest in its work, thus rendering its labors much more effective.

Reports from the Secretary and directors of the different stations will be found in the forthcoming volume of Transactions.

The work of the Ad-interim Committee has been very much neglected in this district for the last few years. Rightly handled this committee should be of great benefit to this Society in working up the horticultural interest of this district. Could it not also be a valuable assistant in the experimental work, looking up new fruits and other matters of interest in horticulture?

There will probably be a large increase in the number of printed volumes of our reports this year. These reports are of great value to any one who plants a tree or cultivates a garden. These volumes should be thoroughly distributed among our people and I hope that each member will consider it his duty to induce at least one person to join our Society and get these valuable reports.

But I must draw these remarks to a close. We have a full program and should enter upon our regular work as soon as possible. There is a good prospect for a pleasant and profitable meeting, and I have no doubt that our work will be agreeable and interesting to all.

Next in order was the election of officers for the ensuing year, which was taken up and disposed of with the following result:

President—A. Bryant, Princeton.
First Vice-President—A. Dunning, Dunning.
Second Vice-President—J. V. Cotta, Nursery.
Third Vice-President—F. C. Johnson, Kishwaukee.
Secretary—E. W. Graves, Sandwich.
Treasurer—L. Woodard, Marengo.

Mr. F. C. Johnson, of Kishwaukee, and Mr. Rice, of Rockford, extended an invitation to the Society to hold its next meeting at Rockford. On motion of Mr. Dunning, the President and Secretary were instructed to locate the next meeting at Rockford, provided they found on looking the matter up that the in-

ducements offered were sufficient to justify its going there. If not, to locate the meeting where they deemed best.

DO HORTICULTURAL SOCIETIES PAY?

BY SAMUEL EDWARDS, PEORIA.

The first meeting of the horticulturists in this State, with more than local attendance, was convened at the solicitation of the late lamented Edson Harkness, then of Peoria county, who died many years since in California. It was held Oct. 13th, 1847, at Farmington, Fulton county, and took the name of Illinois Horticultural Society, Dr. Hannaford, president; C. R. Overman, secretary.

Some forty varieties of apples, three or four of pear, and orange quince were on exhibition. An able address was given by Edson Harkness, devoted mostly to orchard-fruits and hedging. Mr. Harkness and the Messrs. Overman, of Fulton county, were propagating the Virginia Thorn, and had had fears that the Osage Orange being introduced by Prof. J. B. Turner, was not hardy enough to withstand our winters.

John Hancock, of Tazewell county, had samples of the latter—had been growing them several years—claimed to have been the first introducer of it in this State. Isaac Merriam, of Tazewell county, was sanguine in the hope that the quince would be successfully grown.

Interesting discussions were had on best mode of propagating fruit trees and orchard management, ravages of insects and how to control them.

Small fruits, which have since then justly occupied so much attention, were not discussed. Elijah Capps, of Fulton Co., Bartlett Walker and Mr. Godfrey, of Knox Co., Mr. Watson, of Henderson Co., W. J. Phelps, Peoria Co., Boyd Bros., Mr. Dewey, H. S. Hiatt and James Bull took an active interest in the meeting, and there was a large attendance of farmers' families from the vicinity. Adjourned to meet at Peoria in Sept. 1848, but of this no account has been made public. The 160 miles round trip to Farmington with wife and little ones in wagon, has always been considered a paying one.

A meeting of pomologists was held at Princeton, Dec. 18 and 19, 1850. Edson Harkness, chairman, F. K. Phœnix, secretary. The two-days' sessions were occupied mostly in discussing varieties of apples, and forming a permanent organization. Adjourned to meet at Princeton, Oct. 1st, 1851.

The appointment was met by a general attendance of fruit-growers from Northern Illinois: also R. Avery, of Iowa, J. C. Brayton, of Wisconsin, and W. M. Wylie, of Michigan. John H. Bryant, chairman, Samuel Edwards, secretary. Two days of

active work—mostly on apple-list, insects, blight, and organization of Northwestern Fruit-Growers' Association. Dr. J. A. Kennicott was President.; R. Avery, E. Harkness, and Dr. L. S. Pennington, Vice-presidents; F. K. Phœnix, Corresponding Secretary; L. Edwards, Recording Secretary; A. Bryant, Treasurer.

The second annual meeting of the N. W. Fruit-Growers' Association was held at the Court House, Dixon, Ill., September 29 and 30, 1852, with members in attendance from Indiana, Iowa. Ohio and nineteen counties of Illinois, and large numbers of the citizens of Dixon and vicinity. At the suggestion of President Kennicott, a committee was appointed, which reported resolutions of respect and condolence on the recent death of A. J. Downing, "the father of American Pomology—a national calamity."

Henry Shaw read an able and interesting paper on the education of the laboring classes for their vocations, which was warmly received, and, on motion of C. R. Overman, a copy was requested for publication. The subject was earnestly and approvingly discussed by President Kennicott, F. R. Elliott, E. Harkness, O. B. Galusha and Mr. Huntington.

President Kennicott made a plea for the organization of a State Board of Agriculture, and a committee was appointed—C. R. Overman, Dr. L. S. Pennington, A. R. Whitney and Henry Shaw—to attend, as delegates from this Association, the convention to be held at Springfield on the third day of the next session of the Legislature, for the purpose of obtaining action on the subject by the Legislature.

Arthur Bryant introduced a resolution, and was appointed chairman of a committee, with power to select his associates, to memorialize the Legislature to enact a law making fruit-stealing larceny.

Most of the time was spent in discussing the list of apples and best mode of propagation. Dr. L. S. Pennington, Adnah Williams, Cyrus and Arthur Bryant, and S. Edwards, advocated top-working some varieties of apples as being more hardy and coming into bearing earlier than root-grafts. Mr. Williams was in favor of the mode for general practice—believed that trees worked thus were better worth one dollar each to the planter than to plant root-grafted trees, receiving with them a dollar each as a gratuity. There are, he believed few exceptions to the rule.

One hundred and ten varieties of apple and some fifty or sixty of pear, a few specimens of peaches and quinces, Catawba, Fox and Isabella grapes, one variety of plum, and one variety of each, gooseberry, raspberry, and strawberry in cans, forty varieties of dahlias were exhibited. Dr. J. A. Kennicott was elected president; R. Avery, A. Bryant, W. H. Loomis, vice-

presidents; F. K. Phœnix, corresponding secretary; S. Edwards, recording secretary; A. Bryant, treasurer.

The third annual meeting was held in the City Hall, Chicago, Oct. 4th, 1853, President J. A. Kennicott in the chair. Sessions were held four days; 143 members enrolled from New York, Ohio, Michigan, Indiana, Iowa, Wisconsin, and nineteen counties of Illinois. There was a large exhibit of apples, two collections of eighty-six varieties each, and one of ninety-eight, pears one lot ninety-eight varieties, peaches twenty varieties, plums five varieties, orange quinces, nectarines, apricots, almonds, and five varieties of grapes.

Varieties of apples, grapes and pears were discussed largely, peaches, plums and the small fruits to a less extent. The late J. A. Wight delivered an excellent address on the elevating influence of horticulture which was published in the Transactions. On motion of E. Harkness, a committee was appointed to memorialize Congress for the transmission of seeds and scions by mail on same terms as printed matter.

The magnificent display of fruits, floral decorations by the veteran Samuel Brooks; presence of so large a number of earnest men in the work—Charles Downing, Dr. Jno. A. Warder, A. H. Ernst, Smiley Shepherd, Dr. John A. Kennicott, C. and A. Bryant, C. R. Overman, L. Ellsworth, Wm. Stewart, M. L. Dunlap, L. Montague, E. Harkness, Wm. Bebb, E. Ordway, O. W. Brewster, A. Williams, John Bellangee, P. B. Spaulding, D. F. Kinney, James Smith, Isaac B. Essex, Dr. O. Everest, B. B. Drake, I. F. Willard, C. Tolman, B. Treusdell, A. S. Coe, W. C. Pearsall, J. P. Eames, and others, who have crossed the dark river, to meet with us no more except in precious memory—the occasion was one to be reverted to with fond recollection by all who were present. Arthur Bryant, president; R. Avery, J. C. Brayton, and W. H. Loomis, vice-presidents; F. K. Phœnix, corresponding secretary; J. T. Little and S. Edwards, recording secretaries; A. R. Whitney, treasurer.

The fourth meeting was held at Burlington, Iowa, Sept. 25-28, 1855, called to order by President A. Bryant. It was the most largely attended, more from the Eastern States, and had the finest display of fruits ever gathered at a meeting of the association. Some 275 varieties of apples, 195 pears, eighteen plums, eighteen peaches, only Catawba and Isabella grapes.

A collection of over 100 varieties of fruits Dr. E. S. Hull sent by express from Alton failed to arrive. In addition to the large display of pears on the tables, trees of bearing size in the city were loaded with fruit, and much time was devoted to discussing varieties, blight and mode of culture.

A. Frost, of Rochester, suggested as a remedy for blight, where a tree died of it, to send to Rochester and buy two more in its stead—a policy it was my misfortune to adopt. (Of some

1,500 trees, mostly standards planted at different times from fifteen to forty-three years since, not one per cent. remains. No tree gave more satisfaction than White Doyenne on native thorn root which was free from blight and bore fine crops of perfect fruit, until over thirty years old. To those who are tempted to indulge in the luxury of planting pear trees on the prairies, my advice would be to let "the other fellow" who has the blight proof trees to sell, plant them and gather in the sheckles from sale of fruit.) They have been planted so long, if there have been success it should be reported.

P. Barry, of Rochester, delivered an address on the progress which fruit culture has made in the United States during the past twenty-five years; advised low-headed trees, originating from seed of new varieties. Complimented the apples and pears on exhibition as "the finest he had ever seen in his travels at home or abroad."

Apples, plums, peaches, cherries, gooseberries, strawberries, the apple tree bark louse, taxation of nursery stock, and the swindling operations of tree peddlers received attention. A committee of three on the last-named topic made a report of seven pages, from which the following extract is taken: "Let not eastern nurserymen complain of the impositions practiced upon people in their names. The fault is with the system itself —the vicious practice is sending out *traveling* agents. Had they but appointed *local* agents instead, there would be a wide and easily-recognized distinction between the two classes.

A splendid banquet at the Barret House, presided over by Governor Grimes, was given by the citizens of Burlington. President, M. L. Dunlap; Vice-Presidents, A. G. Hanford, C. R. Overman, S. Foster; Corresponding Secretary, Charles Kennicott; Recording Secretaries, H. S. Finley, S. Edwards; Treasurer, A. R. Whitney.

The fifth and last meeting of the N. W. Fruit Growers' Association, at Alton, was called to order by President M. L. Dunlap, September 29, 1857. The minutes were kept by a short-hand reporter, employed by President Dunlap, who had known him in that capacity at Springfield. The attendance was good, and this noted home of fruits, flowers and hospitality was at its very best.

Discussions on the various orchard and small fruits were valuable. Dr. John A. Warder delivered an interesting address. (Our reporter used freely of some intoxicant the last day, and the record was never seen by the public.) C. R. Overman, President; G. B. Brackett, N. J. Colman, Wm. Stewart, Vice-President; S. Edwards, Recording Secretary; A. R. Whitney, Treasurer.

A proposal from the Illinois State Horticultural Society to disband, and in future to act with their organization, was accepted, thus terminating the existence of the first horticultural society in

the great Northwest, occupying extended territory. Its reports are out of print, and with the hope that this brief, imperfect sketch of the transactions of horticulturists a generation since may prove acceptable, it is prepared.

Of the work done up to the present time by its progeny, the state, district and local societies, you are well advised in their published reports. How have they paid? Their membership being of those engaged in horticultural pursuits, each one has contributed something to the common fund of experience—the best of all teachers.

Much of the excellent work done by the late State Entomologists, Walsh, Le Baron, Thomas, and Prof. Forbes, may be claimed as the result of their official appointment at the instance of the State Horticultural Society. Through your Society Dr. Henry Shimer, of Mt. Carroll, made known his discovery of the *Acarus* preying upon the oyster-shell bark-louse, which was so much dreaded by orchardists. For many years the lice have been seldom heard of, and so far as they are concerned, apple-growers can sleep well o'nights, as Dr. S. assured us the *Acari* would take care of them.

The planting of hedges, evergreen screens and timber has been promoted greatly; judicious selection of varieties of orchard fruits, modes of propagation and management—the era for feasting the millions on strawberries, grapes and other small fruits, has been greatly hastened by the labors of horticultural societies. In some instances they have enabled us to revise what was formerly received as horticultural gospel. It has been said by them of olden times: "Plant orchards on high, rolling land." The new version says: "If it has a tenacious subsoil near enough the surface to dry out in a dry time, don't plant there at all; if you have level land, with good, natural under-drainage, plant there every time."

Many valuable institutions of our State, to-day, in no small degree owe their inception, or their interests have been directly promoted, by horticultural societies. They were largely instrumental in securing legislative action for the endowment by Congress of the State Industrial Universities, and paved the way for the Farmers' Institutes—those valued schools for the masses —the enactment of laws for protecting insectivorous birds and for destroying noxious weeds. Aside from and above all considerations of dollars and cents, a greater compensation is returned in the good fellowship established and maintained by them.

THE PEAR.

BY DR. BALLOU, SANDWICH.

The pear is one of the most cherished of our long list of fruits, and is truly one of God's blessings. It originated in Arminia, and it soon made its pilgrimage over all Europe and finally

throughout the North Temperate Zone, where the soil was competent for its growth. The pear tree has a tendency to assume a beautiful pyramidal form. It is said that the pear tree requires more time before fruiting than the apple tree, but modern pomologists have greatly accelerated the fruiting of pears.

In Europe pear trees are said to have survived centuries. The tree may be multiplied indefinitely by layers, cuttings, budding and skillfully grafting on its own stock, which is now common and usually very successful. The pear tree is a very symmetrical grower, and as a standard will assume its own beautiful and natural figure in opposition to any amount of restraint, except the distorted expalier. To give the pear tree a shape that the owner may be proud of there should be no clashing or crossing of limbs, for the straight and symmetrical shoots display the fruit more strikingly to the eye when the maturing stage of ripeness is going on. Meantime when a decayed limb is discovered the owner should at once remove the unsightly member for the continual health of the tree. This method should obtain in reference to any fruit tree, for they are a burden to the growing tree.

Our progenitors required the whole of their long lives, to eat of the fruit of the tree they planted. But by the modern arboriculture the youth may pluck the fruit of the tree he planted when a child.

There has been a great and beneficient revolution in a half century in the culture of the pear tree in the methods which have hastened its fruiting, for modern culture has shortened the space of time more than four-fifths. The methods of the propagation of the pear on account of its early fruiting has been a gratification to all fruit growers. Mr. Perkins, of Boston, was the first who produced the pear by grafting on the quince—the scion being of pear stock. Marshall P. Wilder, of Boston, and Mr. Manning, of Salem, and Mr. Hovey, of Cambridge, commenced the cultivation of quince-rooted pear trees, which may have been seen forty years of age. Pear culturists, indeed, have learned, that the office of the quince is entirely as of root, and not as trunk. It is thought, moreover, by eminent pomologists, that we shall arrive at a point of superiority in the propagation of the pear, which will enable nurserymen to wholly dispense with the quince, root and branch.

The Huguenots bore a prominent part in the introduction and propagation of pears in our country. In preparing for their exile doubtless they selected seeds of their notable varieties and planted them around their homes in a free country, on Long Island, New Rochelle, Michigan and in Illinois.

There are many points which are little understood, although discussed for a long time by men of talent and close observation. Among these are the decline of certain highly esteemed varieties which cannot longer be grown in localities where they formerly

ranked as the highest and the best, the excellence of many varieties in particular places, and their inferiority when in other locations. Perhaps the soil may have lost some of its most vital elements, which enter into the pear, therefore those varieties which have gone into a decline for want of proper nourishment must be supplanted by other varieties and with other stimulating elements in such varieties of compost that will supply newer and stronger elements of nourishment.

PREPARATION OF SOIL.

The pear culturist should understand that the soil upon which he is to establish pear culture must, in all respects, be such as will furnish elements for the pear. The soil should be such as will secure an excellent drainage. Then the thorough pulverizing, deepening and mixing of the soil properly, which will insure a healthy and vigorous growth, adopting the best system of fertilizing, trimming and cultivation can but secure success. The gratification and delight that one feels in growing a beautiful tree, and of having been the instrument of supplying the elements that are to mingle with the virgin soil, and cultivating intelligently with proper methods and resources, the cultivator ought to achieve success. The soil should be made suitable by deep plowing one year before the pear stock is planted; the ground having been plowed and harrowed well it is best to sow peas upon the pear plat in order to keep down the weeds. Early the next spring the ground should be plowed very deep, turning the rich mold over so that the digging of the holes and drainage may be easily made. The ground being acceptable for planting it will give the owner complete success.

DIGGING HOLES.

The soil having been well prepared the digging of holes for trees is a work of skill as well as most labor is in the routine of pear culture. The holes should be dug deep and large, as the most generous views of the pear culturist would dictate, taking care only that they shall be roomy, not less than twice the diameter of the spread of the roots to be planted in them, nor of a less depth than six inches below the normal bottom of these roots.

DIGGING TREES.

The owner is often disappointed and chagrined at seeing a sickly tree linger feebly through three or four seasons of pining. Yellow leaves and sickly branches would often be averted, if some person interested in the life and growth of a tree and with skill to direct, were present at its digging. The cultivator is responsible for the failures if not present at the digging of trees. The proprietor or a faithful laborer should be held responsible for trees which are denuded, limbs broken and roots

destroyed. It is an undeniable fact that the failure of pears is for the lack of skill in digging trees. The nurseryman is usually sincerely desirous that his trees should be carefully taken up that they may appear in good condition. But petty questions arise regarding the expense of increased labor in digging trees and carefully packing them, therefore his reflection is that he "guesses they will do pretty well."

SOILS FOR PEARS.

The soil for pear production must be dry and either deep or capable from its subsoil of deepening without destroying its excellence, and of a looseness of texture sufficient to allow the free extension of the small roots, which, at their terminals ends, are spongioles which drink of the moisture, and, at the time of the rising of sap, the veins distribute the moisture through all of the limbs and terminals of the limbs. A soil of free loam having a large preponderance of sand without being light is preferable, as it is easily worked, when at times a clayey soil would be a bed of mortar. A noticeable instance of this difference is seen in the fact that the winter blight of the pear has never been known on soils that are rich, but on the light soils of New Jersey and Long Island, which seem peculiarly adapted to the growth, productiveness and longevity of the pear. While the winter of 1855 destroyed many thousands of pear trees on strong soils in the counties of Central New York, in the neighborhood of Syracuse this was especially remarkable. In Illinois the pear grower can find many locations where excellent soils can be selected for pear orchards, for we have many localities where we have a heavy loam, composed of course granulated sand, fifteen to twenty per cent. of clay and the remainder of vegetable matter. This strata of subsoil of sand and clay extends to the depth of three or four feet. A bed of gravel we know by digging our wells the lower and valuable stratum is there, thus affording excellent drainage. Our soil, in many localities, is well adapted to pear culture, as we have many elevated prairie lands that are capital locations for the cultivation of pears.

MANURE FOR PEARS.

It is a general feeling among fruit growers that manure which will produce a good crop of corn or potatoes will perfect a crop of fruit. It has been tested thoroughly that well rotted stable compost is without doubt the safest, and ordinarily the most convenient form of nourishment for pear trees. Commercial fertilizers of many kinds are doubtless useful, but not for pears in bearing, for the shoots and limbs feel the stimulating food, and the wood growth becomes the chief factor, and the pears become stunted and shriveled and most of the fruit falls to the

ground. Stable manure, muck, forest leaves, and other organic matter will enable a hungry soil to long retain these fertilizing agents, applied to impoverished lands. Well rotted manure should occasionally be spread around pear trees, especially if the fruiting season is drouthy and hot. Charcoal dust, plaster, or partially dried muck, wood ashes, soap suds, are vastly more appropriate than commercial fertilizers. *Guano* is used in tree culture. There is no doubt about the stimulating properties of *Guano*. It may be adapted to wood growth, but for pear culture it seems to aid in shrivelling the fruit.

FOR MARKET CULTIVATION.

The Bartlett is worthy of cultivation, for it possesses qualities which have secured for it high esteem (September).

Belle-Lucrative—The fruit grows in clusters, and the tree is very productive, thinning being often necessary to prevent injury from over-bearing (October).

The Bloodgood, developed on Long Island, and was named from the proprietor of the Bloodgood Nurseries, and considered to be a seedling (July).

The Buffum—The pears are excellent; seldom defective: a native of Rhode Island (October).

The Columbia—This variety originated in Westchester Co., N. Y.; supposed to be from seedlings planted by the Huguenots. Keeps from November to January.

Doyenne Bousock—This was imported from France by Wm. Kinrick, in 1841 (October).

Flemish Beauty—The Flemish Beauty is one of the most notable pears in the whole roster (October).

Lawrence—This is a native variety, and ranks high with all cultivators of the pear (December).

Seckel—This variety has won and retained the highest popularity, in spite of the smallness of its fruit. September to 1st of November.

Winter Nelis—I am decidedly of the opinion that there is no pear in existence its eqaal in quantity or qualities of fruit (December).

Beurre D'Anjou—For this noble pear we are indebted to Col. Marshall P. Wilder, who imported it from France (December).

Beurre Diel—Named in honor of Dr. Diel (December).

Easter Beurre—This pear keeps late, and of late years has received extraordinary attention (March and April).

Louisa Bonne de Jersey—This excellent pear has a rosy cheek when ripened (December).

Urbaniste—This pear is a favorite wherever it has fruited (October-November).

White Doyenne—The pear needs no special advertising. The tree grows vigorously.

Church—The original tree still stands in New Rochelle, (September.)

Dearborn seedling—This pear is very juicy and palatable. It has grown for forty years around Boston (August).

Howel—The Howel has borne large crops on my premises. There are no defects in the fruit (October).

Madeleine—The pear is a particular favorite in Sandwich, for it is delicious, melting and juicy (August).

Noveau Poiteau—A vigorous, handsome tree, the fruit of which Colonel Wilders description in 1850; is not too highly colored. In size, it equals the Bartlett (November).

Oswego Beurre—It originated in Oswego, New York, by Mr. W. Read. Its great hardiness, long keeping and excellence, make it worthy of cultivation (October).

Howell—The Howell should stand first rate among its fellows (October).

Sheldon—Native of New England; medium to large, when matured the cheek a rich, deep reddish brown, and a remarkably smooth skin (October).

Waterloo—A beautiful, excellent Belgian pear; skin with deep crimson blush (November).

GATHERING, MARKETING AND FRUIT-ROOMS.

Undoubtedly, there is nothing more essential in the cultivation of this fruit than the variation of flavor and texture in the same varieties on different soils. This causes the vexatious contraditions respecting the value of any, or every variety. One pear-culturist will aver that the Louise Bonne deserves unbounded execration, and another, all the adulation which words can express. The Louise Bonne de Jersey and the Beurre Diel are particularly noted for their superiority on sandy loams, while the Onondaga and Virgalieu are best on strong clay soils.

THINNING FRUIT.

Excellent soils, fine cultivation, healthy trees, and the many other requisites of pear growing, will often fail of producing fine fruit, if all that sets is allowed to remain on the tree. Any pear tree is liable to set so copiously that its fruit may, without thinning, not reach full size. Oftentimes, two years after planting, some varieties will commence bearing, and not more than two dozen specimens should be allowed to ripen annually on each tree, until the fifth year. The time for thinning is when the pears attain a size of about three-fourths of an inch in diameter. Meantime, many fall soon after forming. It is not until then the healthy and perfect ones can be distinguished. It is

prudent that not more than one-half of the thinning should be done at once, and those remaining should be undisturbed until we ascertain the imperfect fruit to be removed.

GATHERING.

It is found by experience that there are but few of the finer varieties that are not improved by gathering before they are fully ripe. It has been found that not a few have been discarded as unworthy of cultivation, which, by early picking, improve so as to rank among the first in excellence. It is well known that several varieties rot at the core when left upon the tree until fully ripe which will keep well for weeks when picked earlier. Among these are the Flemish Beauty, Beurre Diel, and frequently, by watching, the Louise Bonne de Jersey. It still holds as a maxim that pears are fit for picking when the cleaving of the stem from the spur, without breaking, when gently raised. Some varieties should not be left so long even as this. The fruit should not be picked on a wet or cloudy day, or in early morning, when the dew is upon the leaves and fruit, as its flavor is much impaired by the moisture, and its keeping properties much injured. If it is necessary to gather it under such circumstances, it should be exposed to the light and air until it is thoroughly dry. Pears picked in the middle of a sunny day are greatly superior in flavor, and keep better. Early gathering is only necessary for summer and autumn varieties. On the other hand, the late-keeping and winter kinds should be picked as late in the season as the frost will allow.

MARKETING PEARS.

In the marketing of fine fruit for indifferent prices, large numbers of pear cultivators have experienced great disappointment. This has always been entirely due to improper gathering and ripening. Market men will not buy fruit already ripe, to be kept for several days, for sale to the retailers, who in turn must keep it on hand for sale as long as they can for their consumers; nor will the retailers buy pears entirely green, as few of them are sufficiently acquainted with the varieties, to be certain how they will ripen up in color and in flavor. Some of the fruits should ripen in the hands of the large dealers, that they may be exhibited as samples, being put into their hands when green and hard. One of the great mistakes frequently made by pear growers is to send the fruit to market after ripening, in such a condition that it will not bear transportation, and often reaches its destination badly jammed, if not a mass of rotteness. It is an error for the grower to market his own fruit, for retailers in such cases will not offer more than one-third or half of the price they expect to pay when their trade demands an immediate

supply. Summer and autumn varieties must be picked and sent to market when green and hard, must be packed tight in barrels or in cases, with coarse matting around the sides, top and bottom, so they cannot shake about nor bruise.

COLORING AND RIPENING SUMMER AND AUTUMN PEARS.

While many varieties will ripen upon the tree with rich golden or crimson colors, like the Bartlett and Sekel, all varieties of pears will attain a richer tint as well as a higher flavor by a little attention. For the attainment of the best result, darkness and warmth in the masses of fruit are necessary. Fruit picked green should be exposed long enough to become perfectly dry, and is then packed in cloth-lined barrels and cases.

RIPENING OF WINTER PEARS.

The Winter Nelis, the Lawrence, Beurre d' Hiver, and others, attain their delicious maturity in the early part of December, instead of keeping sound and hard until February. The Easter Beurre, Glout Morceau, Doyenne d' Alencon. lose a great quantity of their juice by evaporation, and resemble a potato kept one year quite as much as a pear.

FRUIT ROOMS.

For effecting proper conditions of ripening, very expensive structures, fruit houses, and rooms have been erected, and it is but just to say, in many cases, resulted only in disappointment. The only sensible way of preparing safe depositories for storing pears, of long keepers, fruit rooms should be built of double walls, confining a stratum of air between, which is sometimes more perfectly accomplished by the use of dry tan, charcoal dust, and similar substances. There should be but one window, and that filled with double sashes. Ventilators should be provided, which should be allowed to change the air of the room only sufficiently to prevent it becoming feculent and damp. No decaying fruit should be permitted to remain in the room, nor any vegetables or substances having odor. A gentleman who had expressed great disappointment with the flavor of several varieties of pears, was greatly surprised by having the cause of the inferiority of his fruit pointed out. He at once commenced removing from his fruit-room all the materials belonging to the harness and lumber room, the decaying matter accumulated in corners and boxes, and finished with thoroughly cleansing and white washing the walls. The pears, ripened in the room thereafter, were not only a source of gratification in their fine flavor; but of suprise at the means of their perfection. Other fruits may be exposed on shelves, but pears should be inclosed in boxes with tight-fitting covers, or if the quantity is large, in well made barrels

headed up. A fruit-house, thus arranged and managed would be a profitable adjunct to a fruitery. But for most amateurs, a dark closet in the house, or a room fitted up in the cellar, or even the cellar itself, kept cleanly and sweet will suffice. For small quantities of pears, cheese-boxes with covers, have been found cheap and convenient. These should be always freed from the odor of cheese, by cleansing in hot water, with soda or potash. Mr. Barry, the eminent pear culturist, after many years of experience, found the most effective means of preserving winter pears to be: late gathering, packing away carefully none but sound fruit, in close barrels, leaving them in an open shed, only protected from rain and rays of the sun, as long as the temperature is above freezing point. There are many forms of fruit-rooms. The structure may be on a large scale, or only a small room, of but a few feet in size. The side walls, and the lower and upper floors are made double, being filled in with sawdust. The upper floor, consisting of a single layer of boards, nailed on the under side of the joists, with sawdust piled on loosely, a foot or more in thickness. Above this, is an open space or garret, under rafters and roof, with holes in each gable end, to admit a free circulation of air. The main room is divided into two compartments. The fruit-room and ice-room by a partition. The partition unites the walls on both front and rear, but a small opening of a few inches, is left both above and below it—that is, between the whole length of the lower and upper edges, and the floor and ceiling. The ice, as represented, is piled up in a compact mass, in the right division and covered in the usual manner with straw.

DISCUSSION.

It will be seen from reading over Mr. Edwards' and Dr. Ballou's papers, that there is some difference of opinion regarding the success of the pear. This comes from the fact, no doubt, that there are certain localities in Northern Illinois in which the soil and surroundings seem to be adapted to the growing of the pear. No doubt Dr. Ballou is situated in one of those places, as he has evidently been quite successful. There is also a small pear orchard about a mile and a half north of Sandwich, of twenty-five or thirty trees, which has been in existence for twenty-five years or more and has borne more or less every year, but a good many of the trees have been replaced from time to time. Some of the first trees planted in the orchard are still there and they bore a full crop this year. Mr. Pratt, the owner, sold over $80 worth of fruit from the orchard this year, one tree having borne eighteen bushels.

Mr. Piper—I grew the Bartlett for three years with good success some years ago, since which I have failed entirely.

Mr. Minkler asked what the climatic influence was on the pear in different soil.

Dr. Ballou did not think it made much difference. Said he would avoid planting on stiff clay and that he always gave special attention to pruning off the dry limbs in the spring.

Mr. Minkler—I think one great trouble with our pears is the extreme sudden changes from mild weather in the winter to extreme cold. The cold weather would not hurt the trees if it did not come on so suddenly.

Dr. Ballou—I always regret to see warm weather in the winter and always consider it a bad omen. It starts the sap circulating and it is liable to turn cold suddenly, thus hurting the tree and fruit. I had fifty dwarfs and fifty standards in my orchard to start with and I now only have four dwarfs left while my standards have done nicely. I do not consider the quince stock of any value for a pear root, as it is not hardy or in any way adapted to our soil. The Dearborn Seedling is one of my best varieties. The fruit is delicious and it bears well; though not heavy crops every year, it always bears some. The Madeleine is a very good variety also, the fruit always perfect and the best. The tree is reasonably hardy but was hurt some when the theremometer went thirty-four below zero a few years ago. It has since recovered and gone on bearing. Remember and feed your pear trees. Put on some muck and well-rotted stable manure and take as good care of them as you would of your horse. The Duchess is a vigorous grower and for that reason kills back easily. Was the first variety to go among my standards.

Mr. J. V. Cotta—My experience has been that the blight does not kill the pear all at once, but starts in at one place on the tree, and as the poisonous sap from the diseased part circulates through the other portions of the tree, the whole thing becomes diseased and dies. The pear root should not be drowned out. It runs down deep into the ground and should have very deep drainage, much deeper than other trees.

Dr. Ballou—As soon as the least blight appears, it should be removed by pruning the diseased part from the tree. When I

first came to this section, a good many years ago, I shipped in $800 or $900 worth of pear trees from the east and retailed them out to the farmers and people in this vicinity, and many of them have made quite a success in growing pears. I have certainly been successful and shall plant more trees.

Mr. Woodard—I have tested the pear pretty thoroughly in the vicinity of Marengo, and know that it is not a success there.

Mr. Bryant—I think there are a few parties who make a success of growing the pear, in certain localities where the soils and conditions seem to be especially adapted to its growth.

STRAWBERRY CULTURE.

BY D. J. PIPER.

The bright little strawberry so modestly blushing in its lowly bed—the loveliest of all Pomona's sweet gifts to mortals—is still an object of admiration by all lovers of the beatiful in nature, and is a most delicious morsel to the palate of the surfeited epicure and the starving beggar alike. Its presence upon the table is welcomed with delight by all and an appreciation of its important position as an article of diet has been for many years, and still is increasing. Hence, there has arisen an almost universal desire among the growers of fruit, unpredecented perhaps in the history of any other species of fruit, for a knowledge of the best conditions for, and modes of its culture, and of the varieties best adapted to grow for distant markets, for near markets and for the grower's own use.

I can answer the question to a certain degree by saying, have the strawberries well ripened for your own use, well colored for a near market and only about half ripe for a distant market and they will color inside of twenty hours. All these subjects have been so thoroughly and so frequently discussed that there is but little left to be said, except that scarcely any two writers agree upon all points and the seeker after information can after all do little better than to read all the literature within his reach, treating upon these matters, inform himself as to the probable integrity of each writer, the place, the soil, the mode of cultivation given in each case, with results in quality and quantity of fruit.

If he then use his best judgment in the selection and cultivation of six varieties, and finds them all to meet his reasonable expectations, he may consider the day of miracles is not yet passed or that investments in lottery tickets are tolerably safe ones. Yet one or two among his six sorts would probably be among the very best for his use. I have always insisted and must still repeat

with emphasis, that success with any variety which is adapted to to the soil in which it is placed, depends more upon the preparation of the soil previous to planting than upon all other circumstances combined.

No amount of manuring or cultivation after planting can atone for previous neglect. The soil must be made rich, fine and friable to the depth of twelve or eighteen inches if possible. This in most cases can only be done by several plowings. My plan of setting the plants is to mark off the ground as I would for corn, and set the plants in the hill system as I would plant corn. Cultivate both ways until the plants run, which they will do, and cover the ground entirely if let go. Then I cultivate only one way.

In growing the strawberry, I have tried many different kinds, and find most of them produce well, when I have prepared the ground well previous to planting. There is such a thing as having the soil too rich, unless you stop the increase of the young plants by cutting off the runners. I have had single plants that a bushel basket would not cover. Some say that a variety will run out; so do I say so.

In the case of the Wilson, we cannot grow such crops of the Wilson as we used to do. I care not how you cultivate, and this will hold good in every case. The old must die, and the new or young must take its place. Plants have a certain age to live and produce, and then die, and I think the heavier we crop them, the shorter their lives will be for production; hence we must grow new plants from seed again, and we again have the proper vitality to produce what we cannot get from the old and worn-out plants. I care not whether you take corn, wheat, oats or barley in the cereals. You may take the tubers, and from six to ten years is about as long as you can grow any one variety with reasonable success. Take any species of plants that you can grow from seed, and you have got to renew it by planting seed and growing young plants, and there is not any fruit-growing plant that can be more readily grown from seed than the delicious strawberry.

I have been experimenting in this direction ever since 1865. I have grown thousands of new seedlings, and by screening or sorting them from time to time, have succeeded in producing the most wonderful strawberry for vigor of plant, hardiness of constitution to withstand excessive drouth and extreme cold weather, and produce enormous crops of large and uniform fruit. It is, namely, the Pacific. Again, I say it is the greatest strawberry in existence.

In my experimental lot, some three or four years ago, I had it upon ridges like sweet potatoes, and the ground was apparently as hard as a brick bat. I had enormous crops of Pacific, more than double that of my other sorts on the thirty-five varieties.

The past season I gathered eleven hundred quart boxes of Pacific from thirty rods of ground, and they had not been cultivated for the two years previous.

DISCUSSION.

Mr. Bryant asked what the best fertilizer was for strawberries.

Mr. Piper said that hog or stable manure was the best. If that was not to be had, lime and ashes, equal quantities of each, made a good top-dressing, which should be worked in. Strawberries should be protected with a light covering of straw in the winter, to prevent their freezing and thawing.

Mr. Coe—I have found corn stalks to be the best covering.

On motion, Society adjourned until 2 o'clock.

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THURSDAY AFTERNOON SESSION.

Meeting convened at 2 o'clock, as per adjournment, and Mr. H. R. Cotta's paper was called for and read.

RASPBERRIES AND BLACKBERRIES.

BY H. R. COTTA.

With raspberries and blackberries, as with all other fruits, we must not expect profitable returns unless we work for them. On the other hand, I find them quite profitable where proper attention is given.

I drove by a small field of Turner in this city a few days ago. The plants had been set some years ago in squares, and are still cultivated both ways. Each plant stands in a block of sod about two feet square. I suppose if I had talked with the owner of that field about the profitableness of that crop, he would have told me it did not pay to raise raspberries.

In this section of the State, raspberries have been neglected, and blackberries left to care for themselves. There is not one grower in ten who will give his raspberries and blackberries as good cultivation as he does his corn.

To succeed in this industry, we must give as close attention to every detail as we would if managing a store. Do not attempt to grow berries unless you can attend to them when they need it any more than you would attempt to fatten your live stock on half rations.

Any good corn land that is not too low can be made to produce profitable crops of raspberries and blackberries. Prepare the ground as well as possible, setting the crown of the roots about three inches below the surface of the ground. Blackberries and strong-growing raspberries, like Shaffer's Colossal, should be placed three by eight feet apart; black cap raspberries, two and one half by six feet apart.

Cabbage, potatoes, corn, or some other hoed crop, should be planted between the rows of berries the first year, which will partly pay the expense of cultivation, and of the berry plants. Cultivation should be done frequently and thoroughly, and the weeds kept down.

After the first year, there will not be room to raise any other crop with the berries, but the cultivation must be kept up year after year as long as you want profitable crops of fruit. In small fields and gardens, mulching may be done in place of cultivation, where cultivation is not convenient. The first year I pinch off the tips of the largest canes when they are about eighteen inches high, and the following spring I cut back the side branches. After the first year, I nip off the ends of the young canes when they are about two feet high, with my thumb and finger, going over the same field two or three times, at intervals of a week or ten days, as the canes are not all tall enough when I go through the first time. The trimming of side branches or laterals I do in the spring after new growth begins; then I leave them eighteen to twenty-four inches long, except when they are injured, when I cut the injured part all off. After the fruit is all gathered, the old canes should be cut out at once, or may be left till the following spring.

If you have a number of pickers, it is necessary to have some one in the field to watch them, and watch them closely, too, so they will pick all the ripe berries, and only the ripe ones, never putting dirty or moldy berries in the box. This is important. Always use new, clean boxes, of uniform size, to market your fruit in.

Now, as to varieties, don't plant too extensively of some new variety that will produce "fully five times as much fruit as any other," unless you wish to be disappointed. Stick to the old standbys that have been doing well in your locality, or one similar to yours, until you have proven the newer to be at least as good as the older kinds. If you wish to keep up with the times, try the best of the new kinds in a small way, as now and then there is something valuable among them. The best early black caps with us are Tyler and Souhegan, which are nearly identical, and hardy and prolific. The best medium is Ohio; hardy, very prolific, and fine-flavored. The Gregg is the largest, and latest to ripen, but lacks in hardiness.

Of red-suckening varieties, Turner for early, and Cuthbert for late, have taken the lead. Marlboro, Hansell, Reliance, Scarlet Gem, and many others, have not been satisfactory. Shaffer's Colossal is a dark red berry, and propagates from tips. It has been more profitable for local markets than any other raspberry with us, and is rapidly growing in favor throughout the country.

Snyder, Ancient Briton and Stone's Hardy, are the best blackberries, but to insure a good crop every year, they must be covered in winter. Blackberries were an abundant crop throughout Northern Illinois last summer, better than for a number of years. The canes of many kinds of raspberries were injured more than blackberries last winter.

DISCUSSION.

Mr. Cotta—I learned at the Wisconsin State Horticultural Meeting that they are quite successful in that state with blackberries. By protecting them in winter they are able to get good crops.

Mr. Minkler—I have found that dry seasons are very detrimental to the blackberry and that they need plenty of moisture. If you can see they are well provided for in this respect, you will get good crops.

Mr. Rice said that he had learned that the protection of a fence was a good thing for blackberries, and recommended, for family use, that a row of plants set along the east or south side of a fence would give good results.

After some music, Mr. Minkler read the following paper, which he preceded by a very happy and pleasant talk, urging the Society to get the ladies interested in the work. Said we could not make it a success without them, and that no enterprise would be a success without the ladies are interested in it and take a part.

STARVING ORCHARDS.

BY S. G. MINKLER, OSWEGO.

Mr. President, Ladies and Gentlemen:

You ask me to write a paper and leave me to select the subject. As I have a mania for orchards I will say something on that subject.

Five million fruit trees are starved to death! Now there has been, and is, a great ado about iron-clads, hardy varieties, that

will stand all sorts of abuse and starvation. The United States, England, Wales, Germany and Russia have been ransacked over and over again to find the *desideratum* that will stand blue grass sod, horn-prunning, cattle-browsing, and the gnawings of calves, sheep, rabbits and mice, and bear a heavy crop every year. Yes; and the people to tickle you, have just the thing you want: The *hardy Russian* at fifty cents each—all Ben Davis! What is all this hue and cry about? and what is the cause? I say—Starvation!

You have taken all you could from the orchard for the past thirty years and made no returns whatsoever. You have not even applied the scriptural injunction, to "dig about and dung it."

You ask what is the cause of the trees dying. I say, Starvation. The past two or three years or more you have gathered heavy crops, exhausted the vitality of the trees, and nothing to recuperate them but blue grass sod and drouth. How has it been the past season? The early apples were fair and nice because we had plenty moisture; the latter part of the season was dry, and the blue grass absorbed what little moisture there was; hence the crop stopped growing and you see the result—starvation!

Brethren, have any of you succeeded in raising a good crop of corn or other cereal for twenty-five years in succession on blue grass sod, without making any returns after planting?

You say they winter-killed. I say, they are starved to death, and you did not observe it till spring. Of course the vitality was somewhat, I will say, much weakened—had not strength enough to send the blood (the sap) to the extremities; so they died down, as we say. The same cause in gangrene—the blood did not flow to the extremities. Why, brethren, I have been just as mean as the rest of you, and had to suffer the consequences. When I go through the orchard the trees cry, "Blue grass! blue grass!" Where I manured heavily last year the apples were fair this fall. Now I will make an assertion—that there is not an orchard in this county, of one hundred trees, that has been kept in continuous cultivation for the first seven years of its life.

IRON-CLADS OR HARDY VARIETIES.

The Duchess seems to be standard for comparison in the apple, as the Concord in grapes, or the Seckel in pears. I will admit that the Duchess, the Red Astrachan and the Alexander, (the latter is worthless), are Russian; the only three varieties that Dr. Warder speaks of as Russian. Then we have the Northern Spy, the Fameuse, E. G. Russet and Whitney No. 20, which are all hardy in stock, suitable to top work such varieties as you choose—provided you do not starve them to death.

I am aware, sir, that we have a fickle climate. It is the sudden extremes from heat to cold. If it would remain cold from the

beginning of winter till spring, I care not how cold, if thirty or forty degrees below zero. Why I have known it in the state of New York not to thaw at the eaves of the house for six weeks, and there was no complaint of winter-killing of apple trees.

The calamity that has overtaken us has happened once in fifty years! Well, what shall we do under the circumstances? Or what would you do if a crop of corn or potatoes should fail? Would you plant again? Certainly you would. Then plant another orchard. Do not try to renovate the old one by planting where trees are missing; it will prove a failure.

Brethren, do not expect something for nothing. I have said the orchard is the most abused piece of ground on the farm. What do you say, friends? It is said that experience is a dear schoolmaster; nevertheless you have learned some things that will be beneficial to you. You have learned what varieties to plant that are adapted to our soil and climate and what the market demands.

Now, Mr. President, if this paper solicits discussion I will be satisfied. It is the discussion that is valuable and not the paper.

DISCUSSION.

Mr. Goodrich, from Southern Illinois—We find it impossible with us to get fertilizers enough for our orchards, though we ship it in large quantities from Chicago, St. Louis, and other places wherever it is to be had. I would like to ask Mr. Minkler where we are going to get the necessary fertilizer.

Answer—Sow your orchard ground to clover, and when you have a good strong growth, plow it under. Then seed it down to buckwheat, and plow that under.

Question—What varieties of apple are the best to plant?

Answer—Ten varieties are plenty for family or market use. For summer, Benoni and Early Harvest; for fall, Duchess, Cayuga Red Streak and Maiden's Blush. The Cayuga Red Streak is the best. It is always marketable, and will always pay. The Duchess is a Russian variety; very hardy; what you would call iron-clad; a good bearer, and sells well. For winter, Jonathan, Grimes Golden, Minkler and Ben Davis. The latter, though despised by some, is always a good seller and a profitable apple. The hard winters of a few years ago killed them out over this part of the State, but that may not happen again in fifty years, and we can afford to lose them once in a while.

THE DIFFICULTIES AN HONEST AGENT ENCOUNTERS IN CANVASSING.

BY A. D. LOUCKS, CHICAGO.

Mr. President, Ladies and Gentlemen:

When I was honored with a request to prepare a paper to be read at the Twenty-third Annual Meeting of your Society, the subject upon which I was to write was chosen for me. I make this explanation to dispel from your minds, any suspicion that may have arisen from reading its title in the program, that I am desirous of posing either as a martyr or a saint. Working for successive seasons in the same section, and representing a responsible and reliable firm, well known throughout that section, upon whose support I could depend in my endeavors to convince purchasers that all of our interest was not confined to getting their orders and collecting payment therefor, I have not experienced the hard trials of many of my fellow workers. Still, it must be confessed that, even under the most favorable conditions, there are more difficulties to be overcome in making sales of nursery stock than exist in any other branch of trade. There is nothing to be gained by closing our eyes to the fact that the dear public does not welcome our endeavors in its behalf with that confiding spirit which would tend to lighten our burdens; in fact, there exists a positive distrust of our honesty of purpose that is both disagreeable and, at times, positively disheartening. This should not be, and in asking why it is so let us be honest with, and to ourselves. A profession that deals with the beauties of nature, should be a source of joy to all parties concerned. There are faults upon both sides. Do not many nursery-men, in their anxiety to increase the amount of their sales, neglect that protection of their reputations which greater care in selecting agents to represent them would insure? We have all seen advertisements for nursery salesmen that read "experience not necessary." Viewed in the broad light of results to be attained, is there any other business in which experience is more necessary than in this, the prime object of which should be to make oases of Nature's desert places: to make bright and beautiful that which is bare and unattractive? Experience through which alone can come that knowledge of causes and effects relative to the growth of plant-life under the varying conditions of climate, soil, etc., which, practically applied, succeeding years shall but round out the design, and make more beautiful the effect. See that new place, the house completed and furnished: everything being done by the owner with the intention of making it a home, in the best meaning of the word.

He secured the services of an architect of reputation to design the house: he decided upon heating apparatus, furnishings, etc.,

only after thorough investigation. The grounds are now ready for the nursery-man. I can assure you he is there on time. Suppose him to be one of the "experience-not-necessary" kind of agents. He has a catalogue and a plate book. He has no practical knowledge: has confused ideas of the contents of his catalogue and has to read the name under each plate before he can tell what it represents, but he possesses unlimited gall and the gift of gab. The owner of the place knows little more, perhaps not so much. His family have procured several catalogues. Catalogues describing stock adapted to a range of country extending from the Arctic Circle to the Torrid Zone. This is necessarily so, as catalogues are for general purposes and wide distribution. From these catalogues they have made up a list, not two articles in ten of which should be planted in the section of the country where their home is located. They do not know this nor does the agent (experience not necessary.) The agent agrees with them, enlarges upon their their ideas, crowds upon them all he can of everything possible and goes his way rejoicing in the consciousness of having made a large sale.

A year's time elapses and now look at that place. The stock was delivered and planted. Stock, the majority of which would grow luxuriantly—somewhere else. A grievous disappointment has resulted: another bitter enemy of nursery-men been made. Hard and long continued work will be necessary by the ablest of salesmen to overcome that prejudice and secure an order that shall right the wrong committed in the beginning.

"Experience not necessary" to sell nursery stock! Well, I don't know that it is to *sell* the stock; but to have each place wherein it is planted a living, glowing advertisement of the firm from which it came, experience seems to me to be the most important factor. The itinerant dealer in nursery stock needs attention, as one who has done as much, if not more, to bring the nursery business into bad odor with the public than any other. In this class are many reputable dealers and it is needless to say that in what follows I do not refer to them, but to the tramps in the trade who dare not remain in one section long enough to have the stock develop its true character. We have seen many of them around Chicago and the usual term of their existence is two seasons, fall and spring deliveries. But another crop springs up to take the places of those gone before, and the same dear old public listens to their claims and believes their promises. And their claims as to what they have done in the past, and their promises as to the future, make an advertisement of the powers of a "seventh daughter of a seventh daughter" seem very truth in comparison. No salesman who cannot or will not make such promises but has lost many valuable orders by reason of them; and I can readily understand how an agent, selling on commission, brought into competition

with those pirates in trade might be tempted for self-preservation, to forsake the realms of truth and no sales, for the region of fiction and temporary profit. And the worst of it is that their victims never discriminate between them and reputable salesmen and firms, but include all in one loud and long tirade of abuse. Why cannot nursery-men combine and refuse to sell to any but the reputable dealers, in the class of which I have been speaking, and so compel the others to get all their stock, instead of a portion of it, from along the roadside? They are a curse to the business and a stumbling block (and no easy one to contend against, I can assure you) to every salesman who is endeavoring to do business in such a way as shall be a credit, not only to himself, but to the firm he represents.

The time is not far distant when reputable nursery-men will have to face these questions and adopt radical measures in the treatment of them. The situation is not getting better, but worse. Could they but go among their customers they would perceive this themselves. It is of vital importance that some movement be made, some course pursued, which shall once for all, lop off these fungus growths that threaten the very existence of our business. I am aware that such treatment may for a time decrease sales, but I am fully convinced that it will be but a temporary decrease; and as the public realizes the change, and the reason for it, confidence and sales will grow apace, and the end justify the means fully and completely.

Bona fide co-operation on the part of nursery-men, and a thorough education of the public as to their duty in the premises, will accomplish the purpose sooner than we may deem possible. Our profession, properly appreciated, is full of glorious possibilties and rich in grand achievements. There cannot be anything more gratifying than to see some place which two or three years previous was a barren spot, now transformed into a little "Garden of Eden," each shrub and tree bearing witness to the good judgment that placed it there, and all uniting in one harmonious whole. Honesty, energy and perseverance, coupled with a thorough knowledge of our business will surely win.

The salesman who can bring to his firm not only the orders but the confidence of his customers, gains doubly for his employers. He can have no higher plane of action than the gaining and retaining of the confidence of each of these parties between whom he acts. Let us aspire to that high plane, and grasp every line leading upward to it. We may not always attain it or keep upon it, but all shall be better for every effort we put forth in our endeavors toward it.

After some more music, the following paper was presented:

LANDSCAPE GARDENING IN ITS APPLICATION TO PUBLIC PARKS.

BY J. A. PETTIGREW, SUPERINTENDENT LINCOLN PARK, CHICAGO.

To the landscape gardener and the aboriculturist, the signs of the times are highly encouraging. On every hand we find that public parks are being established, or that the preliminary steps are being taken, having this end in view. A wave of sympathetic feeling on this subject is sweeping over the country. The American public, energetic and progressive in public work, now demand that places shall be set apart for rest, recreation and instruction. It behooves us, then, to be up and doing to meet this popular demand to educate ourselves in the work necessary to meet these requirements, to be able to grasp the possibilities of the art in its application to the designing and planting of public parks.

It is to be hoped the day is not far distant when state governments to preserve spots wealthy with nature's beauties, will preserve them by providing for their purchase and maintainance, and dedicating them to the public use. What opportunity would then be presented for the grandest conceptions of the designer! Imagine a tract in the Adirondack region—its natural beauties harmonized and made available by the hand of a genius.

A paper on this subject must, of necessity, be brief, and limited to a few general ideas. No arbitrary rules can be framed for guidance in landscape gardening; location, climate, topography and surroundings of the site chosen for a park—all have to be studied by the designer.

Should the ground to be improved be possessed of any natural beauty, endeavor to give full expression to it. Masses of woodland may be the natural adornment of the landscape, covering a larger space than can be embodied into a harmonious feature. The treatment of this requires taste and judgment. Such should be cut up into groups, carefully designed to retain any desirable natural feature already possessed.

The thinning in the groups or masses should be done gradually; light and air introduced will encourage feathering out. This elimination, continued judiciously from year to year, finally will tend to give each tree a certain individuality, without impairing its blending in the group.

In the formation of groups from natural woodland, greater skill and judgment is required than in planting groups on new ground. While desirous of saving fine specimens in opening the mass, yet it must not interfere too much with the object to be attained, which is to produce banks of foliage as points of rest for the eye, with a promise of more beyond, as evidenced by the

green sward sweeping round the edge, as though leading to beauties as yet unseen. Avoid tameness in the arrangement of groups; the outline should range from a graceful curve to a bold point or a deep recess. Occasionally, a fine specimen may be left to stand alone in the lawns or open spaces, or from some point to give greater boldness to its outline.

Should the trees be bare of foliage on the outline (as thickly grown forest trees are apt to be) the effect can be removed by planting low-growing trees and shrubbery in front of defective spots.

One of the natural features of the spot may be a rocky glen or ravine, with possibly a trickling rill or rippling brook in the bottom. We will suppose its sides and top here and there clothed with beeches and maples, or the tulip tree, while on the rocky faces, the white birch mingles with the juniper or the Scotch pine; for the undergrowth, we have the red-bud, the Florida dog-wood, and many others equally beautiful.

The top of yonder rock, though sparse of soil, seems to be a home for the Houstonia, while from a seam in its face hangs a clump of the nine barks. Clematis is here, too, accompanied by the pink cone flower and the Campanula; lower down in the moisture revel the Maiden-hair and Shield ferns. That pillow of polypod indicates where a fallen limb is mouldering. Nature seems to need no assistance here, yet a delicate hand may strengthen and add in the direction that it points.

Should the ground selected for a park be flat and bare of natural beauty, the tameness may be relieved by artificial elevations; gentle undulations are preferable. No such incongruity should be attempted as the imitation of the picturesque or grand; such efforts will fail from puerility.

The undulating character of the ground may be apparently heightened in effect by planting as much as possible on the elevations. In forming undulated ground, the designer should aid to produce the same effect as intended by the ideas previously expressed on the grouping of trees.

On ground of this nature, the formation of an artificial lake is of great assistance, the excavated material being available for the forming of undulations, aside from the natural beauty of water tastefully introduced into the landscape.

Avoid tameness in the line of the shore; make a sweeping bay here, and a bold promontory there. Off from a promontory or a point, an island may be introduced, which will add to the boldness of the effect. From any one point of vision, the eye must be led to believe that more remains to be seen, a belief which will be verified by a change in the position of the observer.

The elevations of the banks of the lake should approach in character the nature of the surroundings, occasionally relieve

the shores and banks with apparent out-croppings of stone ledges, half-sunken boulders, or tree stumps, which, half seen through the foliage of creeping vines or ferns, greatly soften the often too hard lines of the shores of artificial waters.

A clump of rushes may be used to tone down a projecting point. A quiet cove may be made more natural by a patch of the water lily, or of the lotus.

The prominent features in a landscape are wood, water and green sward, and their harmonious arrangement constitutes the charm of pleasing scenery.

The location of park driveways depend so much on the environment of the park, that much cannot be said thereof. It can safely be depended upon that the surrounding property to a city park will be made available for residence. In such a case, the driveway should be of sufficient distance from the park limits to allow of breadth for effective and massive planting of trees and shrubbery around its borders, where abutting on residence property. The ideal park of the people conveys the idea of retirement and seclusion from bricks and mortar; therefore, street life should be made invisible, if possible, from the interior of the park.

The driveways should, in graceful, sweeping curves, give commanding views of the principal points of interest in the park, and at the same time these curves should not be allowed to approach each other so nearly as to slice the landscape into strips alternately of gravel or grass and trees.

In planting observe unity in grouping, let some designs be apparent. Should the driveway sweep boldly around a point, let that point be clothed with a heavy group of trees; the object of the sweep of the road is then explained. On that piece of roadway, slightly curved, permit the eye to wander across the vista to the irregular outline of the groups of foliage beyond, or delight itself in the reflection of the pendulous branches of the elm or the willow on the placid bosom of a lake. If your roadway is carried through a piece of dense greenery, let it be to emerge into a view of charming openness and beauty.

Unity or harmony in planting consists in the blending of the trees of the groups with each other, so that incongruous associations and violent contrasts may be avoided; the oak will not bear close association with the birch, yet may be connected by some other form of growth intervening, which is in harmony with both.

Coloring in groups should also be studied; light and shadows too have their part in Nature's harmony. As an example; note the effect in winter of an association of the white birch with the pine.

Evergreens and shrubbery may occasionally be used in the foreground of groups, but in the way of an attachment to, rather than as a part of the group.

Trees of a sweeping habit such as the weeping birch, elm, ash, or some of the maple should be employed apart from groups as single specimens; in open glades they are effective from any point of view.

In parks of large extent a portion may be set apart for natural woodland scenery, seemingly unrelieved by art, where the grassy glades and knolls are ignorant of the existence of a lawn mower, but are cunningly planted with native flowers and shrubs, and strewn with half concealed rocks and stumps covered with native creeping vines.

There the delighted botanist can ramble and feast on a collection of native plants, seemingly natural to the situation, yet carefully nurtured and their wants attended to although the evidences of it are concealed.

Where the true groups and masses are arranged in a picturesque and irregular manner and a luxuriance of shrubs, brambles, and undergrowth of native species abound, such an arrangement can only be attempted in parks of large size, for while a source of delight to the lover of nature, yet such are not adapted for large congregations of people bent on pleasure, and from such must be protected. Probably four-fifths of the park visitors are pedestrians, therefore the matter of good walks and their location is an important one. The designer must be a student of practical utility as well as of natural beauty, he must go even further; he must be prepared to do violence to his taste sometimes for the sake of utility, and especially so in the laying out of walks, for it is a lamentable fact that in a public park the sovereign people are apt to be inappreciative of fine effects if it interferes with their complete freedom and enjoyment.

Nature, it is said, abhors a straight line, yet paths may not be too much curved or winding, if trails through the grass are to be avoided. Walks should be well drained, firm and dry, and should be broad and hospitable, leading from the entrance, and carried in the same spirit by convenient routes to the points of special interest in the park, where large numbers are liable to congregate; side paths may be branched from these (trunk) walks leading through the park in graceful sweeps and curves. Shade on the side paths is indispensable, therefore they should be carried where shade can be found or if wanting, where it can be planted without marring any intended effect.

Floriculture at the present time occupies a conspicuous position in park mis-adornment. With questionable taste our parks are filled with gymnastic caricatures of the art; it is hard sometimes to tell where the menagerie ends and where the flower garden begins. The Saviour said that Solomon in all his glory was not arrayed like the flowers of the fields, yet to what a state of degredation have they been subjected by some modern florists in the prostitution of his art. He hesitates not to employ them

in delineating a lion's tail, or to give color to a ball player's cap, and in other monstrosities even more absurd.

Floriculture being of necessity more or less artificial in its requirements and display, when employed in park adornment, should have a portion of the ground set apart for its use, and should be confined and screened within those bounds by judicious planting of trees and shrubbery. Nothing would seem to be in worse taste than to see artificial and formal beds of flowers scattered throughout the park.

Floral displays are confusing and unintelligible when seen from any great distances, therefore to be appreciated must be brought close to the eye, and concealed from distant views. Where the florid style of the art is employed, meaning thereby the massing of colors in ribbon or parterre work, such embellishments as vases, fountains of statuary, terrace work or stone balustrades are permissible.

The conservatory or palm house may overlook the parterres from a broad terrace from which a commanding view of the parterres may be had.

The old fashioned but delightful herbaceous borders should not be forgotten, but rather, in our estimation, should take precedence over the modern style, a winding irregular border round a space rectangular or nearly so in its outline, at the back low trees and choice shrubbery. The front may be promiscuously planted with herbaceous plants graduating from the tallest at the back to the lowest in the front, reinforced by annuals and bulbs in summer, a foreground of lawn and a broad walk form the ground work of interesting and effective floral adornment.

Much remains to be said on the subject. The practical details have not been touched upon in this paper; the habits and qualifications of the various trees, shrubs and evergreens have been scarcely mentioned; the ideas expressed have not been sufficiently elaborated; yet if it should promote discussion of the subject in the least degree, it will not have been unproductive of good.

DISCUSSION.

Mr. Woodard—I consider the paper just read a very valuable one, and the more that we can have of the kind the better.

Mr. Dunning—The subject is a broad and professional one, and one that requires a great deal of study. Mr. Pettigrew is a very practical man, and has done some very valuable work in the changing and re-modeling of Lincoln Park until now it is one of the finest in the world. It will pay any of the members of this Society or any person who contemplates starting a park to visit it.

Mr. Periam—I find in my travels over the country that most every town has a park, but very seldom find one that is kept up at all; for some reason they are all left to run down and are of no pleasure or benefit to anyone. It is but little expense to keep a park up in shape, and it would be a source of pleasure to every one.

Mr. Austin—It is not near as much trouble and work to keep a park in shape as one would suppose. We have a small one at Downer's Grove, and the expense of keeping it up is but a trifle. There are no parks in the world equal to or finer than those of Chicago.

On motion of Mr. Periam, Mr. Sanders and Mr. F. C. Johnson were appointed as delegates to the American Horticultural Society, to be held in Texas this winter, and the Secretary was instructed to furnish them with the necessary credentials.

On motion of Mr. Dunning, a committee of three was appointed on final resolutions by the Chair, namely: Mr. Coe, Mr. Dunning and Mr. L. R. Bryant.

After some discussion on general topics, the Society adjourned until 7: 30.

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THURSDAY EVENING SESSION.

President Bryant called the meeting to order at 7: 20, and the Committee on Exhibits reported as follows:

REPORT OF COMMITTEE ON EXHIBITS.

William H. Hamen, Franklin Grove, fine specimen Grimes' Golden Apple, considered one of the best specimens of the season.

D. J. Piper, Forreston, plate of Salome Apples, best specimen exhibited.

Dr. Ballou, Sandwich, nine plates of apples, unnamed.

L. R. Bryant, Princeton, specimens of pure cider vinegar.

A. W. Orr, florist, Sandwich, exhibit of plants and flowers. Palms, following varieties: Chaemerops Excelsior, Areca Lutesaens, Curculigo Recurvata, Lantania Borbonica, Bracena Indiviscia. Collection of Primula Chinensis, specimens of ferns and other plants, bouquets of carnations and roses.

A. R. Whitney,
Andrew Dunning,
W. C. Hazelton,
Committee.

Mr. Periam offered the following resolution, which was unanimously adopted:

Resolved, That in the paper of Mr. Samuel Edwards the Society has received much valuable information, particularly in what relates to the early history of horticulture in the West, and that the thanks of the Society are hereby tendered to our venerable friend and co-worker in horticultural art and taste, and that the Secretary be instructed to forward a copy of this resolution to his name at Peoria.

Following the adoption of the above resolution the Congregational choir, of Sandwich, rendered some excellent music, after which Mr. Coe read the following paper:

THE VILLAGE GARDEN AS AN ECONOMIZER.

BY E. G. COE, SANDWICH.

The village garden is either a nuisance and source of worse than useless expense, or it is a joy and source of profit, to its possessor. To make it the former, the recipe is simple, and the powers of nature join to make it a complete success. If you care to try the experiment in a practical way, so as to know just how perfect a nuisance your garden can be made to your neighbors and yourself, put a man and team upon it with a plow while it is just reasonably sticky. Then let it lie until it dries into chunks. Now plant and sow it. You may be sure that kind nature will see to it that there is a growth of vegetation there, and if your vegetables come up, they will have plenty of company. Do not spend your valuable time, too much of it, with the hand-plow, hoe or rake. There are plenty of dry-goods boxes which need holding down, and the elements will take care of your garden. If you happen to be attacked by a spasm of industry, you may, when the weeds have fairly covered the ground, give it a good hoeing; but be sure to do so just before a rain, and leave the ground well covered with what you have cut up. In this way, the weeds will increase and multiply; and, while you may get a few messes of lettuce and peas, you will be certain to have a fine crop of weeds, which will seed the grounds of everyone on your block, and you can tell your fellow loafers that you know that it does not pay to make a garden in a village, and demonstrate the truth of your assertion by showing them your own.

To make a garden a source of joy and profit, is not so simple a process. It requires some thought, some calculation. and a fair amount of work. Nature is just as ready to help in this as in the former, but her forces are blind, and need guidance.

Take the same piece of ground with which you made such a success in the way of a nuisance. Instead of a team and plow, give

the man a spading-fork; or, what is better, take the fork yourself. If you have a piece four rods by eight, it will take a couple of days to turn it up and thoroughly pulverize it. When this is done, you have a seed bed from eight inches to a foot deep, every particle of which is ready to furnish food for plant life. After a very wet winter, or one of little frost, it pays to loosen the ground below the spading. Do not sow a seed upon any part of it until after it has lain a day or two exposed to the atmosphere. If nature is kind enough to send you a good rain upon it before a seed is put in, so much the better. Do not rush in the seed if it happens to look rainy. The elements of the plant food in the air, carried down by the rain, combine with those in the earth, but do not spring into activity and fly away when the shower ceases, and the subtle chemistry of nature takes time for its processes. The seed sown after the rain is over is liable to outstrip in growth and product the one which lies and soaks, and then has to push its young plant through a hard crust.

A piece of ground even smaller than this has in it room for a row of raspberry bushes, three or four grape vines, and currant bushes enough to supply a fair-sized family with all the "lazy-man's" fruit which it needs. Do not wait a year or two to set these. They grow rapidly in our soil, and if you have never tried it, you will be surprised to find how soon they will supply your table.

Do not plant too large a portion of your garden for early vegetables, nor too much of any one kind of seed. It takes but a few square feet to raise enough of the first crop of onions, lettuce, peas or radishes, and all the surplus is a dead loss and a nuisance. Put in few enough so that you can afford to lose them by a late frost if it should come, but enough to furnish your table well while they are young and tender. "A little at a time and often" is a good foundation rule to follow in your garden during the season. Beans and corn planted so early that they come up yellow and stay so can hardly be expected to yield much of a crop or to have it ready for use before that which is planted when the ground has become warm and danger of frost is past.

A little watching will show how long it takes from the planting to the time when each kind of vegetable is ready for use. Make a note of this and let it be your guide in putting in the three or four later crops of those things of which you need a succession during the summer months. Last year we had four plantings of peas, no two of which lapped each other enough to allow the earlier to grow hard, yet from the time the first were ready to use until late in the season there was scarcely a day on which there was not an abundant supply for the table. The same was true of beans and corn; and the lovers of the "Native American" succotash and of the separate grains can guess how large a place they filled in the economy of the household.

No garden ever reaches its zenith as an economizer which has not in it a strawberry bed. It need not be a large one, but it will save more fifteen cents, York shillings, dimes and nickels, than any other known piece of earth of its size. The old parsnips, too, such as our Holland Dutch ancestors grew and absorbed on the shore of the Zuyder Zee, with turnips on the ground used for early vegetables, are not to be left out.

As for potatoes, we try to plant enough to last until the high prices of the new crop have gone by; then trust to others to raise our supply for winter.

Celery has grown to be a necessity, and we must raise it, or pay so much for it that it cuts us short in something else. I wish some one who knows just how would give us a season's lessons in growing and handling it.

At least one quarter of the plat should be kept for flowers. There should be room for beds of nasturtions, verbenas, phlox, tulips and pansies, and four-o'clocks, such as our grandmothers used to cultivate, and the dahlias, eutoccas, gypsopilas, and all the other things which flower lovers have invented and imported, should have a place; especially, you cannot affiord to leave out the tube-rose, a few years since such a rarity, now as easily propagated and cultivated as a bed of onions.

Such is the village garden when reasonably handled, and from it a family of four or five can gather all the vegetables and small fruits which it needs during the year. Do you ask where the economy comes in?

First, It takes up, absorbs and utilizes all the kitchen and chamber slops of the household, which otherwise are a trouble to dispose of, and which, if not properly cared for, are liable to become a nuisance and breeders of disease, especially during the summer months. If properly distributed the slops of an ordinary sized family will furnish all the fertilizing needed for the village garden.

Second, The family which has in its own garden a continuous succession of seasonable small fruits and vegetables, forms the habit of eating them more freely than when it depends upon the vegetable peddler for its supply, and so saves not only the dollar or more which it would pay to him each week, but also cuts down the bills at the butcher shop and the grocery store.

Third, It saves the often over-worked house wife the bother of the vegetable cart being late, or having sold out just the thing she wanted for dinner.

Fourth, It saves pantaloons and time, for the man who has a good vegetable and flower garden becomes interested in it, and instead of being obliged to sit around town and tell and hear of his neighbor's faults and shortcomings, finds something to take up the hours after his day's work in the shop or elsewhere is

done; and there is not one man in a hundred who does not waste time enough to plant such a garden and keep it in order.

SMALL FRUITS FOR A FAMILY OF FIVE.

BY W. C. HAZELTON, FOREST GLEN.

One would think when he sees the large number of farms destitute of all signs of small fruit, except perhaps a few scrubby currant bushes, that the owners of these farms looked upon the culture of small fruit as a difficult science—as something beyond them and altogether out of their line: all well enough for horticulturists to attend to, but not worth while to bother themselves about.

Could the farmers of Illinois understand that no more skill is required in raising a hill of strawberries than a hill of beans, that raspberries and blackberries can be grown just as easily as corn and potatoes; it seems as though there would not be such a lack of fruit in their gardens. And I believe our Society can do no better work than to show how easily and cheaply these fruits can be had. In discussing this question of fruit for the farmer's garden (or for anybody's garden), I would not urge too strongly the claims of the different varieties. When a family has once learned that fruit is just as essential on the table as potatoes, the question of variety will take care of itself.

To any one who desires to supply his family of, say five or six persons, with an abundance of small fruit, I would say go or send to the nearest nursery-man and get 200 strawberry plants; 150 raspberry plants; half as many blackberry plants; about the same number of gooseberries; three dozen currant bushes and a couple dozen grape vines. If in doubt as to what varieties will suit you best, let the nursery-man select for you. The chances are he will make a better selection than his customers. But be sure and send to the *nearest* reliable nursery-man. Don't send to Canada, or New York, or New Jersey, or any other "foreign" market. I speak from experience. I well remember the plants I ordered, a thousand miles from home at fifty cents each; and the utterly unsatisfactory results. I don't do that way any more. Now I order my plants from a neighboring nursery-man at fifty cents per hundred, and get such as are adapted to my own locality.

As to cultivation there are no rigid rules to be laid down. Any one who can cultivate ground so as to produce a good crop of corn and potatoes, can successfully grow small fruits. The preparation of the soil is much the same. If a little more care and a little more fertilizing is used so much the better. A plat of ground forty feet wide, and 300 long, will afford ample room and enable one to do most of the work with horse and cultivator. One reason I apprehend why so few raise small fruit is a

dread of the labor it involves, and where all the cultivation is done with spade and hoe, it is certainly no light task. But where small fruit is set in rows, permitting the use of horse and cultivator, there is little more labor required than in cultivating an equal area of corn. If I could select a plat of ground for the culture of small fruits for a family of six, I would make it forty by three hundred feet, and plant in rows for convenience in working the horse and cultivator. In this I would set two rows of blackberries five feet apart and sixty plants in the rows. Two rows of strawberries three feet apart, and three feet in the row, requiring two hundred plants. Leaving a space of six feet for the future resetting of these plants; I would next plant two rows of raspberries five feet apart and four feet in the row, requiring one hundred and fifty plants. Next a row of gooseberries five feet in the row or sixty plants. And in the last row of the plat I would plant thirty-five currant bushes five feet apart, and twenty-five good grape vines. This would require 590 plants all told, at a probable cost of ten dollars. With these plants well set out and an occassional half hour's work with the horse and cultivator, and an hour's work with the hoe, during the growing season I would expect to furnish my family of six persons with an abundance of fruit and have some to give my less provident friends.

DISCUSSION.

Mr. Piper—I think Mr. Hazelton is on the right track, and if his ideas and plans were carried out, there would be no trouble in raising an abundance of fruit for any family.

Mr. Dunning—I think if the farmers, and people in general, throughout the country, knew how easy it was to raise and care for a garden of small fruits, which would supply their families with an abundance, there would be a great many more gardens of the kind than there are.

Mr. Coe—I think the paper recommends plenty of ground for a large family, and believe that, ordinarily, there would be plenty of fruit for home consumption, and enough to pay for all trouble and expense.

THE GARDEN IN THE HOUSE.

BY MRS. M. J. CUTLER, KANKAKEE.

Madge and Jerry went to housekeeping. Hundreds had done the same thing before them, and why should not they follow a good example? True, they had little knowledge, and less expe-

rience, but so had the aforesaid hundreds, and what is the lack of knowledge or experience to count against a long life before one in which to acquire both? So, with a delightful bliss that comes of ignorance, the little old farm-house under the hill had new tenants in the spring.

And now Madge, with all the varied days of spring, summer, autumn and winter coming regularly each twenty-four hours, found herself haunted with the constantly recurring question, "What shall I get for dinner to-day?" Now Jerry had started with the good resolutions that many have, and plowed a spot for a garden, getting some seeds at the nearest store, and, with a great deal of eclat, getting everything into the ground just in time for the rain storm about the last of March, for the weather had been delightful for a few days, and the ground was easily worked. Potatoes, peas, beans and onions, radish, lettuce, turnip, beet, cabbage and parsnip seeds, were all put in delightful rows, and duly covered and marked, so that much was off his mind until gathering time should come. A goodly appetite had come with every hour's work, and, with that best of relishes, hunger, he was glad to welcome the noon-time.

Madge, with praiseworthy industry and skill, had prepared a tempting-looking dinner; the tomato soup, from her own canned tomatoes of last summer, had just the appetizing quality for such a bright spring day; the bread was delicious, the meat about right; but the potatoes—what was the matter with the potatoes? Some were all done to pieces, and some seemed a little hard. The discussion on their demerits resulted in the opinion that there were two kinds of potatoes grown together, one kind cooking much sooner than the other. "For," said Madge, "part of them are smooth and hard, and part are all lumps and watery, when I peel them."

"I wish I had known it before planting," said Jerry, "for, though they did not all look alike, I never thought they would cook differently. You will have to separate them before cooking. But, Madge, what kind of a pie is this? "

"I made it for an apple pie," said Madge, meekly.

"Did you use half water?"

"I never put a drop of water in," stoutly replied Madge.

And, truly, the fluidity of that pie was something remarkable. The bits of apple seemed floating around in it still uncooked.

"The grocer said this was a very fine kind of apple, such a good keeper. Here it is spring, and they are as sound as ever. I confess, I do not care for them to eat, they are tasteless, but I thought anything would make a pie."

O! innocent Jerry; don't be deluded in that way again.

"These were said to be Willow Twigs. I'll get some others to-night."

So, another day Madge exerted all her skill on another pie. The pieces she cut quite fine, to be sure and have them cook through. A tea cup of granulated sugar was spread over them, some nutmeg grated evenly on, and some bits of butter put around, and a nice crust firmly crimped on.

"Now the oven must be just right, surely, or the crust will bake before the apples are done," thought Madge, from her previous experience. So she adjusted everything with the greatest care, and the pie looked so nice, it was with an air of exultation she put it on the dinner table. But lo! and behold, it was but a counterpart of the first; the same overflowing fluidity, the same obstinacy to cooking soft, and the same want of flavor.

"Well," said Jerry, "I think you'll have to give up that you can make an apple pie. The grocer said these Ben Davis apples were all the rage now; they are such good keepers."

"I think they will keep here," said Madge, "unless a small boy or two get into the cellar."

"How would those Roxbury Russets do that Neighbor Stone gave us?"

"O, they would never cook; they are harder than a brick."

"You might try some baked. Mother used to have nice baked apples."

"O, no apple is good baked after they ripen in the fall," said Madge.

Nevertheless, a few days after, having nothing else for dinner, she thought she would try those uninviting Russets, and, taking out the core at one end, she filled them with sugar, for Jerry had a sweet tooth, she knew, and, putting them in a not very hot oven, awaited the result with some solicitude. They did look nice about an hour afterward, and surely had a fine fragrance, so she set them away to cool with a pleasant anticipation of success. And how delicious they were! a light brown color all through, and so rich, and such an exquisite flavor!

"Now," said Jerry, "life is worth living. These are better than mother's."

"How I was deceived in them," said Madge, "they were so hard and brown. I trust to appearances no more."

"Not even in lettuce?" said Jerry.

"No, not even in lettuce, though you must agree that the lettuce was as tough as it looked."

Now Jerry's lettuce was a total failure. The idea of crispiness had never entered its head. Indeed, it had no head, only a few oblong, leathery leaves. And a catalogue of flowers and seeds that had somehow found its way into the house, could give no information in regard to it.

"Isn't it time for string beans, Jerry," said Madge one day, "I am getting tired of potatoes only."

"You cook them in so many delicious ways," said Jerry, "that they take the place of all other vegetable. If you lived at Mrs. Drune's awhile, you might well long for something else. I was there two months, and she had fried potatoes three times a day every day I was there, and you may judge from that there was not much variety in anything else. Some fried meat and poor bread was the regular fare. And I don't wonder they were all cross and selfish. No one can live on such food, and have good health, either physical or mental."

"That explains about Joe Crawldon," said Madge, "I have heard it intimated that he was going to lose his farm. He has lost all interest in it, and I've always heard he had so much ambition when young. He has such a nice farm, it does seem strange that he cannot have everything comfortable and beautiful around him, but Troll and I spent the day there several years ago, and the dinner was the poorest I ever sat down to. There was salt-rising bread in the first place. Now, when made exactly right and fresh, it is eatable, but that was like chips; some milky butter, a few little pieces of fried salt pork, swimming in grease, and a tablespoonful of green gooseberry sauce, completed the dinner for us. There was also tea; but, as Troll and I never used it, it was no addition to our dinner."

"And not even fried potatoes?" said Jerry.

"Not even a potato. It was too early for their new potatoes, probably, and I suppose the old ones were gone; but did you say there were beans in the garden?"

"O, I was in hopes you would forget about them. The peas are looking nicely, and will soon be ready for use; but, I am sorry to say, there are no beans."

"What is the matter?" said Madge.

"Why, I suppose," said Jerry, with an unwilling tone to his voice, "it may not have been just the right time to plant them when the peas were planted."

"Why, no; how could you?"

"I'll never do it again, and I can plant now for summer use. But the radishes were nice, you must admit. The round white ones are the best; they are so sweet, and not a bit strong. I'll have only those next year; the seed came from Germany. And the strawberries are getting ripe, with promise of a large yield. What shall we ever do with so many?"

"We can send some to Mrs. Drune that you said never had such things; maybe it will suggest to them that they can raise them, too, and they are so easily canned, I can put up some for winter."

So, one day Jerry came into the kitchen when the deed was done, and said, with astonishment: "Why do you turn your strawberry cans all upside down?"

"So the strawberries will not all rise to the top. By turning them two or three times while cooling, the berries are all mixed through the juice, and look as round and plump as when fresh. Otherwise, they are in a solid mass in the top of the can. And if any mold forms on them, it does not waste so many, either; but I haven't left much chance for mold, for I let them stand five or ten minutes when first filled, and they settle down more than any other fruit. Then I unscrew the top, and fill up with some hot, and they are so much nicer."

And Madge surveyed, with a very pardonable pride, the row of tempting-looking fruit cooling on the table.

The strawberries mostly disposed of, the gooseberries were more trouble, for they were more remarkable for their acidity than for anything else, and no amount of sugar would sweeten them. Why they should be so much more sour than those of the same kind at her mother's, Madge failed to ascertain. Whether the locality, time of gathering, or mode of cooking, still remains a mystery; but the gooseberries were rejected thereafter, and their place more than filled by the wild fruits of blueberry and huckleberry, for Jerry was sure a huckleberry pie was about the best thing manufactured in the kitchen. His taste had been put to a severe test once when working for Farmer Rode, for Mrs. Rode thought the berries were so sweet they only needed a sprinkling of sugar, and consequently it was entirely impalatable to Jerry. Now Madge knew that all fruit pies needed a tea cup full of sugar to two of the fruit, no matter how sweet it might be, and so, though most of their summer fruits they used uncooked, her huckleberry pies, just from the northwest corner of the cellar, were simply delicious.

The work Jerry put into the garden each evening was returning him a hundred fold, in the pleasure of watching things grow, in the pride of having everything so nice, and in the enjoyment of the table. No day passed when there was not something for dinner, fresh, tender and sweet. There was some discoveries made too. The different kinds of peas were not equally good. Another year would find a different variety. The turnip seed planted in March, he did not care to hear mentioned, and the onions were that variety, they were appropriately named multipliers, which would take some work to eradicate from the garden, so persistent were they in spreading. The late beans had proven a good investment, and some planted later still were ready for fall use. And Jerry was getting seeds for another year. Some cranberry beans at one of the neighbor's had pleased him wonderfully, he was sure he had never eaten anything so rich and sweet in the shape of a bean before, so he put on his memorandum to send to Vick for a quart, and to get the poles ready during the winter.

The fall found some experiments with apples very satisfactory, and the most delicious pie that ever Madge had the pleasure of making, was of apples from Indiana east of Danville. They were hard and green, coarse-grained, exceedingly brittle and juicy, but delicious to eat, and similar in taste to the Albermarle Pippin, of Virginia, the Pippin however not ripening till spring, and these being gone by December. The Baldwin and Rhode Island Greening shared quite equally in merit for their cooking qualities; Madge preferring the Baldwin for eating as not being so acid as Jerry's Greening.

Jerry had learned something before the 25th of July about turnip planting, so he was ready on that day to try again another crop, and the winter found their cellar so well supplied with vegetables that Madge found it easy to answer the still daily recurring question: "What shall I get for dinner to-day?"

GRAPE CULTURE.

BY PAUL BONVALLET, ST. ANNE.

Gentlemen—By request of Mr. A. Bryant I have the honor to present you the following report on grape culture in Kankakee county, the result of many years experience.

We are situated in the southeastern part of the county. This locality is yet sparingly settled, it is composed of wild prairies and sandridges varying from ten to forty feet in height. The soil in the prairie bottoms consists of a black sandy loam resting on quick sand and is consequently quite cold, when drained it is well adapted for gardening and general farming. The ridges are composed of a deep, yellow sand and are covered with young oak timber, the large trees—some of them measuring from two to three feet in diameter—were cut down many years ago.

On one of these sandridges my father, with a capital of several thousand dollars brought from France, was induced to plant a vineyard about twenty years ago. At that time all kinds of produce, especially fruits, were selling at very high prices. It was then claimed by some horticultural reports that such a time would never be known when the supply of fruits would exceed the demand, and that Concord Grapes would never retail for less than 15 cents per pound.

The soil of our sandridges is of the very best to be found for grape culture; as it is quite dry in summer the young vines will not grow very much until they are deeply rooted, and it will take several years before they are fairly established; when well started and if properly treated they bear good crops of superior quality every year. The high situations are quite exempt from late frosts, except last season when a freezing wind took away about four-fifths of the crop. The proper distance for setting the vines is about 8x10 feet apart. They are trained on a single wire about

five feet from the ground and are cultivated twice during the season with a one-horse plow, the soil being quite free from weeds, except an abundance of sandburs that are sometimes a protection against intruders. The pruning is done during the fall, and the vines are laid down and covered with wild hay, supplied from the prairies close by. There are some seasons when this protection may be unnecessary, but as the weather cannot be predicted, we think it is safer even for the hardiest varieties. We have tested many varieties; among the most successful are the Concord, Martha, Delaware, Perkins, Hartford Prolific, Isabelle, Catawba, several of the Roger's hybrid, and many others, but for profit the Concord is yet the leader. Owing to the healthy qualities of the soil, and with proper cares, we have very little trouble with diseases. After many years of experience, a great deal of perseverance and many disappointments, we have at last succeeded in raising fine crops.

The next thing of importance is to dispose of the crop. Being only 55 miles from Chicago, it is our main shipping point. Our soil being warm and dry our fruits always mature a few days before other points on the same latitude, and about two weeks before Michigan fruits—we generally commence shipping as early as August 15th. Hartford Prolific, Perkins and Martha, being the first varieties to ripen, are sold at a fair price, but they cannot be disposed of in large quantities, the demand for these varieties being limited. There are some new kinds of early grapes, such as Moores' Early, which seem to be promising; also Champion and others. We do not know yet how they will be appreciated on the market, but one decided fact is that one hundred baskets of black grapes will sell more readily than ten baskets of white ones; red grapes are also preferred to white ones. After the earlier kinds come the Concord, the only grape yet known that can be disposed of in large quantities and at a fair price, at the same time come the Roger's hybrids. No. 4 being the finest black grape grown here and No. 9 the most beautiful red; No. 15 and Salem are also very fine. All of these Roger's hybrids are larger, more showy and of finer flavor than any other varieties. Nevertheless they are not appreciated up to their full value on the market.

As fast as the crop ripens the ripest fruits are gathered and hurried to the market. The first consigments (provided they are sent to reliable commission houses) will realize about 60 to 75 cents per basket in small lots; transportation, commission and packages to be deducted from these figures. The first shipments of Concord will sell for about 50 to 60 cents per basket in any quanity. It has to be shipped as fast as it ripens, as prices will decline every day, and when Michigan fruit arrives the market will very often drop down to 15 or 20 cents per basket; then we have to stop shipping, Michigan growers having the benefit of cheap

transportation by water. The crop not always maturing evenly, a good part—sometimes half of it—remains in the field. We have to resort to surrounding towns that generally are supplied by local fruit dealers and gardeners, consequently large quantities cannot be disposed of in this way, the balance has to be made into wine. Very good wine can be made in this locality, but the trouble is that this is not a wine-drinking country, the people being divided into different classes: the temperance people, the ordinary drinkers, who prefer poor whiskey to anything else, and the more refined consumers, who will have nothing but imported goods; manufactured in Europe with potato alcohol, worth over there about 20 cents per gallon, or pure wines produced by 30 cents a day labor—it is quite a task for the American producers to compete with that. The market is also well supplied with wines coming from California, where it is said to be a drug on the market. Hence, wine making is not to be recommended as a general industry in this country. If people would drink more wine and less whiskey it would be, according to the laws of evolution, a great step toward true temperance, which consists, according to some wise people, of putting a bottle of wine on the table and be contented with half of it or less.

I beg leave to call the attention of all the fruit growers and shippers to the fact that the present commission system is far from being satisfactory, buyers having all the advantage over shippers.

It is urgent that shippers should unite to make a reform of some kind. The auction system as adopted by California fruit shippers seems to be the best; it brings all the buyers together and compels them to compete for the goods. Under the present system they have perfect control of the market. The way the goods are scattered on South Water street it is impossible to ascertain the extent of the supply, and the commission men are left to believe or disbelieve the misrepresentations advanced by the shrewd buyers.

I invite fruit shippers to discuss the above question, which is in my opinion one of great importance.

HORTICULTURE AT THE UNIVERSAL EXPOSITION AT PARIS, FRANCE, 1889.

BY LEON HAY, KANKAKEE.

As the Universal Exposition of Paris is now over, and its thousands of wonderful and interesting objects have been seen by millions of people from nearly all over the world, most of whom have taken back with them information which will prove of much use to them and their community, and others who were unable to attend have pretty thoroughly posted themselves by reading a few of the many articles which have continuously

appeared in all the leading periodicals, all of which will be additional strokes from the steam engine impelling the ball of progressive civilization; but, no matter how much has been written about it, or even if all has been put in print, the half will never be known to the same person, though he may have attended and studied article after article from beginning to end.

Respecting the horticultural display alone, of which, if all there is to be told, like of many other things that were there, was in details, it would fill volumes. Only a very few of the most important will be briefly mentioned.

Among the first, was the holding of a grand horticultural exhibit every two weeks, which lasted from three to six days, according to the length of time the products would keep fresh, and it took many expert horticulturists the remainder of the time to make preparations for the next one. Here could be seen in their due seasons the choicest vegetables, fruits and flowers, not alone of France and her colonies, but also what could be gathered from all over the world.

Some of these displays were entirely, or partly, devoted to one or a few special classes of flowers or fruits. At several, there were profusions of orchids, and other very choice flowers, perhaps the greatest display of the kind ever held. At another, beginning September 5th, solely devoted to grapes, was noticed among the numerous fine specimens a few bunches of white, black and red grapes, which must have weighed several pounds each, and the berries, of which were oval, measured over an inch at their longest diameter. By much care exercised in keeping the bloom on the fruit, its natural beauty was preserved.

Of the choice things from our country which outrivaled any other fruit of its kind seen there, was the Kelsey's Japan plum. The few specimens resembled very much, in shape, a peach, about two or two and one-half inches in diameter, with the cheek exposed to the sun of a clear, rosy hue, gradually changing to a clear yellow on the other.

So much was there at these displays that no one but an expert, devoting all his time for the few days they lasted, could have done them justice.

The main horticultural department was situated on and occupied nearly all of the beautiful site of the Trocadero Grounds, of about thirty acres in area. It slopes to the east, and faces on the other side of the river Seine. The Champ de Mars are the grounds on which was the main part of the Exposition. Aside from containing the pavillions, in which the semi-monthly displays were held, may be mentioned the exhibits of growing fruit trees exposed by the nursery-men, the various modes of grafting, training and rearing trees; green houses containing plants and fruits which could not be grown in the open air climate of France; about all the tools and imple-

ments used directly and indirectly in this business; flowers, shrubs, trees and other plants used in landscape gardening, and so arranged in the grounds, which were already a park, so as to present the best display; as soon as a showy bed of flowers was past its season, it was immediately replaced by another of equal or prettier colors or design; the magnificent rustic forestry pavillion, built of branches or roots of all the varieties of wood grown in France, and containing inside a sawmill at work, panoramas of various forest sceneries of France, and a display of numberless wooden articles.

This pavillion was certainly worth several days studying it thoroughly. In short, it may be said that on these grounds could be found about all what is common and what is rare in the horticultural line. Giving credit to whom credit is due, the French people do certainly know how to tastily arrange an horticultural exhibition.

Notwithstanding that such a large and magnificent site was devoted to horticulture, including forestry, each nation had its own horticultural and forestry exhibit in its division or special pavillion. What could not keep fresh in its natural state, was either canned in glass jars, or imitated by wax models or plaster casts, a brief description of which would be even too elaborate.

A machine which I believe there are none like it yet in the United States, and which would prove of considerable use to some market gardeners, and to canning factories, is a green pea-sheller manufactured by two firms of France. The first having heard of it directly through a standard authority as being successfully used in some large canning factories of Paris; but, owing to the fact that at several times workmen have broken them to pieces on the ground that they take away the work of the poor, it is kept out of view of everybody, although it would not be a difficult matter to procure one. This sheller is made entirely of wood, and does not corrode the peas.

Those manufactured by the other firm were placed on exhibition and could be found at work every day, but as it is a new invention and owing to the fear of imitation the working parts were kept out of view. While it does not do perfect work yet it is practical; but very few peas remain in the pods and but a small number are broken. The machine sorts the small peas from the large ones and each sample is delivered through different spouts in separate measures as clean as can be done by hand. From what I saw these shellers do and from notes furnished by the exhibitor, their cost at Paris, and capacities are as follows:

First. Small size sheller about three quarts per minute. Price 160 francs, about $30.

Second. Medium size sheller about twelve quarts per minute. Price, 850 francs, about $165. This machine shells about as fast as seventy women could working by hand.

Third. Large size sheller for factory use, about fourteen bushels per hour. Price 2,000 francs, about $380.

While these large machines would be practicable for canning factories, the small size would be very well adapted for market gardeners, who supply the local markets, and the medium size for supplying the wholesale trade. Yet I would not advise any one to purchase one with the expectations of realizing large profits before it would be tested by some expert, society, or otherwise. While they bid fair to become in general use they have yet room for improvements. Although there are many agricultural experiment stations in the United States, we are in need of some specially adapted for testing agricultural implements.

France, whose agricultural implement interest is, perhaps, not the hundredth part of ours, has one, and although but recently established, is doing a grand work for its country.

While at the Paris Exposition the horticultural display as a whole was perhaps the greatest ever held, yet of all its fine garden vegetables, choice fruits and exquisitely beautiful and fragrant flowers, with a few rare exceptions, and aside from quantity and neatness in arrangement I have seen nothing superior to what we grow in the United States, and in 1892 we ought to see a horticultural and forestry display at Chicago with renewed exhibits and a rustic forestry pavillion superior to all that has previously existed.

After the reading of the preceding papers the choir rendered some more good music, after which the President called on Jonathan Periam for his address.

THE MISSION OF HORTICULTURE.

Mr. Periam, of the *Prairie Farmer*, Chicago, was called on for his paper on "The Mission of Horticulture." Mr. Periam coming forward spoke extemporaneously, apologizing for not producing a paper, saying that he had of late years trusted so much to stenographers that he had gotten out of the habit of writing. In this case he had not the privilege of selection. He had found himself down on the program to answer to the subject. It was too broad for a paper and of course could not be properly discussed in a half hour's speech; he therefore would not attempt to cover the subject, and of course might not keep strictly to the specific subject, but would endeavor to do so correlatively.

Some of the missions of horticulture are to introduce better methods of art; to grasp whatever science may give us from time to time; to improve processes and cultivation, and as religion carries the human family to higher and higher planes of life, so does horticulture carry to higher and higher planes of excellence, in thought and practical cultivation, now leading every department of agriculture.

Let me define the word agriculture. It has to deal with everything the earth produces: husbandry, stock raising and farming, the dairy, poultry, bees, silk, and the cultivation of other fibers; this is one of the two general discussions. Horticulture is the other division, and as my good friend, the late and lamented Dr. Pardu, once said, the butt end of agriculture; just as Brother Minier, also well known in the horticulture of Illinois, once happily put it, "Horticulture is the fine art of agriculture, and floriculture the religion of horticulture." Horticulture therefore is still more universal in its missions than is agriculture. It has to deal with every tree of the forest, to train them into forms of beauty as well as use. For did not Mahomet say, "He who planteth a tree watereth the earth;" had not Zaraster, the Persian, and Confucius, the Chinese, still earlier enunciated the same sentiment.

Did not the great Humbolt within the last century write, "Man first destroys and then again builds up forests." Horticulture has to do with all the fruits of the earth, with all vegetables, with all flowers, and last but not least, the very earth itself in transforming barren tracts into things of beauty through landscape gardening.

Looking at horticulture in its missions, in these lights, I am reminded of the lines where the poet Milton, in Paradise Lost, makes Eve say:

> "O flowers, which will in other climates never grow,
> Who now will rear ye to the sun?
> From thee, from thee, how can I part!"

Yet we have this comfort. Inasmuch as every succeeding epoch of the earth has been more perfect than the preceding, as each recurring civilization has been superior to that past, so it has been of the advances in material art in horticulture within the last hundred years.

What may not the mission of horticulture climb to in the years not far distant. The art has already been separated into separate divisions of industry. Nothing in its history has so helped good work as this. Let us hope that the near future will see it so rounded out in its entirety, each working out its own separate end and all assisting each other, that the next fifty years may see it the most complete, as it is the most fascinating, to which the mind of man can be turned.

The men and women of Illinois, within the last 50 years, have raised the profession to a high plane. All honor to such men who have gone before us as Father Shepherd, Judge Brown and Dr. Hull, who have died in later years, and to those of the old guard who are still with us. May they still be spared many years in the good work to which they have devoted their lives. Our good friend, Samuel Edwards, has devoted his life to one of the missions of horticulture, beautifying the prairie with trees. Mr. Petigrew, whose

paper you listened to this afternoon, has another mission in horticulture—landscape gardening; Brother Whitney to commercial orcharding; Edgar Sanders to floriculture; Mr. Dunning to the products of the garden; Brother Minkler to fruits for the palate of man; Brother Cotta, Graves and a host of others to the production of trees and plants for the masses of people. So, Mr. President, ladies and gentlemen, you cannot fail to see that the good work to success has been pretty well covered. Yet I believe we are only on the threshold of possibilities in the art that but few have ever dreamed of.

One of the missions of horticulture, or rather a mechanical art connected with horticulture, has been through the canning of fruits and vegetables, and enables us to have the fruits of every climate on the earth daily on our tables, if we wish for and can pay for them. Another mission is the preservation of fruits in their natural state for months beyond their season. Still another is the means of rapid transit by railway.

We have anticipated the ripening of fruits for months in the north, so that we now have strawberries at the time of this meeting, in Chicago. So with all other fruits; and the compensation to the south is that later we send them of our own productions to lengthen their season. For instance, the south sends cabbages by the car load, as early as April and May, and we in return send them cabbage by the car load in September and October. So California, that wonderful land of fruits, sends us her nectarines, apricots, peaches, plums, cherries, pears, grapes, oranges, etc., months in advance of their ripening here.

Does it hurt us? No, high and low get a taste, at high prices, and only become more eager for fruits natural to our climate when ripened. The sun is now advancing upon us from the southern hemisphere, cutting a swath daily twelve miles wide, until at length in September his mission will have been finished in the far northern wilderness, ripening the fruits natural to each climate. This is the sun's mission in horticulture, and well does he accomplish his work of fructification and ripening, a work without which all the several missions of humanity, of all animated nature and of every plant, flower, tree or seed, would be in vain.

The Secretary read the following letter he had received from Mr. Ragan:

GREENCASTLE, INDIANA, Jan. 6, 1890.

E. W. Graves, Secretary Northern Illinois Horticulture Society, Sandwich, Illinois.

DEAR SIR—It is useless for me to predict a good meeting of your Society this week. That is a foregone conclusion. With the *material* your section affords it could not be otherwise. I do not state it in the spirit of flattery but in good hard earnest, when I

assert that Horticultural meetings held within a hundred miles of Sandwich excel in character all others which it has been my good fortune to attend.

The recent state meeting at Hamilton was only a sample of their general character. Hope yours may not fall below the general average.

Please extend my warmest regards to numerous friends whom you will have present, and say to all such that we will be glad to offer them front seats at our great Texas meeting, of which the inclosed printed matter will convey only a partial hint.

Hastily yours,
W. H. Ragan.

The Committee on Final Resolutions reported as follows, and after the adoption of same the Society adjourned, *sine die*.

Resolved, That the thanks of this Society be tendered to Mr. A. W. Orr for the display of plants in the hall; to the choir that has furnished us music; to the generous citizens who have kindly donated us the use of their hall, and for the hotels which have so well provided for our temporal wants.

A DELAYED PAPER.

THE Secretary regrets that this report was not received in time to appear in its proper place, in the Transactions of the State Society, but thinks it better to publish it here, than allow it go over to the next volume:

REPORT OF DELEGATE TO IOWA HORTICULTURAL SOCIETY.

BY C. N. DENNIS, HAMILTON.

Meeting was called to order Tuesday morning Jan. 21st, 1890, at 10 a. m. by President Wilson, with about fifty present, and after invocation by Rev. Brown proceeded to work on the program, being reports of the different fruit districts. Crops were bountiful in all southern half of State except extreme southeastern; northeastern suffered badly from drouth, and a late frost cut off much of the strawberry crop throughout the north. Trees and plants were reported in better condition than several past seasons. The Society is wide awake, and notwithstanding the many and severe vicissitudes they have to contend with are not discouraged and are experimenting with Russian and Seedling apples, pears and cherries, also with native plums, and are getting some really good ones that will succeed in the extreme northern part. With their push and perseverance I think they will succeed in solving the problem. One man said "when a tree died he planted two more better ones." Summer apples were in excess of demand and many were allowed to rot on the ground in Southwest Iowa. A very fine exhibition of apples was on tables, consisting of nearly all of the well known varieties from Southern Iowa and Russians from the north, a very fine display of Florida fruits from ex-Secretary Adams and some splendid cider vinegar from C. Patterson, of Missouri, and some elegant flowers and plants from florists in Des Moines.

I think Northern Illinois can get valuable assistance from Iowa experiments and fruits, and other parts of the State, from some of their plums, such as Early Red, Hawkeye, Patton's Choice and Wolf. The Russian Mulberry and Lucretia Dewberry got no encouragement. What Illinois needs most is some of the young blood with the energy and push of the Iowa horticulturists.

PROCEEDINGS

OF THE

Fruit Growers' Association of Southeastern Illinois,

ORGANIZED DECEMBER 31, 1889.

REPORTED BY N. M. BURNS, SECRETARY.

OFFICERS FOR 1890.

President, - - - - - - - - -	ISRAEL MILLS, Clay City,
Vice President Clay County, -	THOMAS LOWRY, Flora.
" " *Marion* " -	ALLAN COPE, Tonti.
" " *Jasper* " -	WILEY HENRY, Newton.
" " *Richland* " -	R. T. FAY, Olney.
" " *Wayne* " -	E. C. KRAMER, Fairfield.
Secretary, - - - - - - - - -	N. M. BURNS, Clay City.
Assistant Secretary, - - - - -	J. R. BROWN, Hosier Prairie
Treasurer, - - - - - - - - -	R. SMITH, Flora.

PURSUANT to the call made for the purpose, orchardists from Clay, Richland, Marion, Wayne and Jasper counties met in the Opera House in Clay City, at 1 o'clock p. m., on Tuesday, December 31, for the purpose of organizing a Fruit-Growers' Association.

Israel Mills was elected President, *pro tem*, and N. M. Burns Secretary, *pro tem*.

A committee, consisting of R. T. Fry, of Olney; C. T. Evans, of Xenia and Anthony Doherty, of Clay City, was appointed to draft the Constitution and By-Laws for the Association.

The committee brought in a Constitution and set of By-Laws, which included in the organization the five counties named above, and provided for the election of a President, one Vice-President from each of the counties, a Secretary, Assistant-Secretary and Treasurer.

After a discussion, which was participated in by Gen. L. B. Parsons, R. Smith, Thomas Lowry and Dios Hagle, of Flora; Judge Kramer, of Fairfield; John Pritchett, of Xenia; R. T. Fry, of Olney and Israel Mills, of Clay City, the Constitution and By-Laws were adopted, with a few changes.

CONSTITUTION.

ARTICLE 1. This Association shall be known as the Fruit-Growers' Association of Southeastern Illinois, and shall embrace the counties of Clay, Jasper, Marion, Richland and Wayne.

2. Its object shall be to promote the science of pomology and the art of horticulture, and to advertise the fruit interests of the district named in the articles.

3. Its members shall consist of annual members, paying an annual fee of one dollar; of life members, paying a fee of ten dollars, at one time, and honorary members, who may, by vote, be invited to participate in the privileges of the Association. The wives and daughters shall be members without fee.

4. The officers shall consist of a President and one Vice-President from each county represented, and a Secretary, Assistant-Secretary and Treasurer, and an Executive Committee, to consist of the President, Vice-Presidents and Secretary. The Executive Committee shall have the management of the affairs of the Association.

5. The Association shall hold semi-annual meetings at such time and place as may be determined by the Executive Committee.

6. The officers of this Association shall be elected at the regular meeting in January of each year, after 1890, and shall hold their offices for one year, and until their successors are elected, and a majority of all votes cast shall be necessary to a choice, and that the vote shall be by ballot.

7. This Constitution may be amended at any regular meeting by a two-thirds vote of the members present.

BY-LAWS.

1. The President shall preside at all meetings of the Association, call meetings of the Executive Committee, and, under its direction, have a general superintendence of the affairs of the Association, and direction of the expenditures of its money;

he shall deliver an annual address upon some subject connected with horticulture, and shall appoint all committees, unless otherwise ordered.

2. The Vice-Presidents, in the order of their appointment, shall act in case of the absence or disability of the President, and shall, by correspondence and personal intercourse with horticulturists of their several localities, endeavor to organize local associations, obtain accurate information of the condition and progress of horticulture therein, and report semi-annually in writing to the Association.

3. The Secretary shall record the proceedings of the Association, attend to its correspondence, and prepare its reports for publication.

4. The Assistant-Secretary shall assist the Secretary to record and prepare for publication the proceedings, and in his absence to discharge the duties of his office.

5. The Treasurer shall receive and keep an accurate account of all moneys belonging to the Association, and disburse the same upon the written orders of the President and Secretary, which he shall retain and file as vouchers; he shall make an annual report to the Association of the receipts and disbursements, which, with the vouchers, shall be referred to the Executive Committee for settlement. Before entering upon his duties, he shall give a bond in the sum of two thousand dollars for their faithful performance, such bond to be approved by the Executive Committee.

6. The Executive Committee shall be subject to the direction of the Association, and manage all its affairs.

7. The By-Laws may be altered at any meeting by a majority vote of the members present.

We had a very enthusiastic meeting, but the time was too short for much good work to be done, except the organization, but we expect to have a two days' meeting in February, when we shall do some earnest work.

Our success in fruit growing has been so marked that our people are greatly encouraged, and we expect our Society to take a prominent place among the horticultural societies of the State.

PROCEEDINGS

OF THE

Kankakee Valley Horticultural Society,

FOR THE YEAR 1889.

Reported by LEN SMALL, Secretary,

FEBRUARY MEETING.

Dr. Pottenger gave a short talk in place of an essay. He spoke of the organization of this Society years ago when he and Milo Barnard first advocated the Society. He is now extensively engaged in grape-growing and is experimenting with many varieties. In answer to questions he said, "Prune grape vines in the fall after the leaves fall naturally." He usually grafts grapes in the spring.

Mr. Cunningham opened the discussions on "Farmers' Kitchen Gardens." He named the following varieties which he can recommend from experience: Grapes—Concord, Moore's Early, Hartford. Raspberries—Miami and Gregg. Blackberries—Snyder. Strawberries—Crescent, Sharpless, Manchester and Windsor Chief. Currants—Red and White Dutch. Tomatoes—Acme, Turner's Hybrid, Livingston's Favorite and Trophy. Cabbage—Wakefield, Fottler's All Year Round.

President Stroud—I don't want so many varieties.

Mr. Enyart—The most essential thing in having a good garden is regular cultivation. Set apart one day of each week to 'tend the garden.

W. S. Hawker—I use a little hot bed to start cabbage and lettuce. Tomatoes do better in a pan in the house. I consider the

working of the garden nine points out of ten. Set apart every Saturday afternoon to cultivate the garden. I pay but little attention to varieties.

O. W. Barnard—The garden spot should be free from trees. Cover the ground in the fall with well-rotted manure; plant everything in rows two to two and a half feet apart; cultivate with horse. Immediately after a rain loosen the soil. I planted corn last year the 7th of April that was ready for the table July 10.

Chas. Pottenger—I plant in rows and use a cultivator called the horse hoe.

A. Mellen—Plant early and in rows, not beds.

Mrs. Mary J. Barnard being asked in regard to floriculture said: Eternal diligence is the price of flowers. Perennials are less trouble than annuals. There are a few annuals, however, that I generally grow, such as verbenas, petunias and phlox Drummondi.

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JUNE MEETING.

As previously announced the June meeting of the Kankakee Valley Horticultural Society was held at the pleasant grounds and residence of M. R. Peters, Manteno, Saturday, 15th. Although rain prevented many from attending, the attendance was fair, over a hundred being present.

The tables were spread under the large decidious trees in front of the residence, and did credit to the Manteno and other lady members of the Society.

Immediately after dinner President Stroud called the meeting to order. The Manteno Glee Club rendered some excellent music. Prayer was offered by Rev. McAwen.

COMMITTEE REPORTS.

Flower Committee—Mrs. Milo Barnard reported that flowers, and especially roses, are doing well, and that their cultivation is becoming very general.

Vegetable Committee—T. C. Dickinson reported early vegetables were badly damaged by cut worms, and in many places entirely destroyed. As a partial remedy, he suggested planting two

or three times as many seeds as we expect to save plants. Potatoes are looking well. Messrs. Lee, Barber and Hume all made favorable reports of cabbage and other vegetables.

Tree and Fruit Committee—Dr. Small reported that plums, cherries and apples in his immediate vicinity give promise of the best yield we have had for years.

F. I. Mann, Gilman—In the southern and western part of the state a short crop is expected. Around Gilman we expect a good yield.

O. W. Barnard—I have traveled over Kankakee county considerably and I have never saw more fruit on the cherry, apple and peach trees than there is now.

Small Fruit Committee—Leon Hay reported small fruit as a whole, a success, although the strawberry slug is doing considerable damage.

Leon Hay, essayist and entomologist, was called on, and responded with a talk on strawberries and their insect enemies. Of varieties he places the Crescent at the head, but also spoke highly of Bubach No. 5, and others. He then gave an instructive talk on the many insects injurious to strawberries, exhibiting preserved specimens in alcohol, and described the habits and history of each.

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AUGUST MEETING.

The August meeting was held at Park Hall, Bonfield, Saturday, the 10th. A nice display of horticultural products was made.

Flowers—Mrs. Mary J. Barnard by request gave a few hints in regard to the culture of the various flowers on exhibition. Of dahlias and gladioluses she said the bulbs were as easily kept during winter as potatoes if thoroughly dried before being placed in the cellar. Hybrid perpetual roses she had found hardy enough to stand out of doors if simply thrown on the ground and covered with any loose material over winter. Mrs. Brainard also read an excellent paper on flowers and their culture, which we regret was not handed in for publication.

Vegetables—T. C. Dickinson in answer to questions named Alaska, American Wonder and Champion of England as the three

best peas for a succession for family use. Of the Early Ohio potato he said: I consider it the earliest potato. The tops are small and have but few flowers. For planting cut them into four pieces. Plant twelve inches by three feet; cover four or five inches: cultivate once a week and pull the weeds.

In discussing the fruits on exhibition some controversy was had in regard to the origin and introduction of the Duchess of Oldenburg apple. On motion, the Secretary was instructed to make a short written report of the history of the variety at the next meeting. C. Boswell spoke highly of the Red Astrachan as a hardy and productive apple of good quality. J. Fundy, L. P. Henry, Len. Small and others, gave favorable accounts of the Duchess.

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OCTOBER MEETING.

A general discussion on "Ornamental Planting for Farmers" was indulged in. Although different views were taken it was developed that the Society is heartily in favor of more general planting by farmers, believing that not only the individuals themselves but the entire people as well as coming generations are to be benefitted, and morally and intellectually improved thereby; that a taste may be cultivated for such work by reading horticultural literature, seeing handsomely laid off grounds and by planting a few flowers or trees.

W. S. Hawker said that he had been unsuccessful in transplanting evergreens and thought both the season and the soil should be considered.

G. G. Barber—The roots of evergreens should be kept moist. Take up a ball of earth with each tree or at least keep the roots from being exposed to the sun and atmosphere. Dig a large hole to plant in, much larger than necessary to hold the roots.

The President said: I have been quite successful with evergreens, having lost only three or four out of thirty or forty planted last spring.

Secretary--In regard to the season, I have found that evergreens can be most successfully transplanted just as they commence to grow which is usually during the early part of May.

W. S. Hawker spoke of a new strawberry bed which had failed to produce fruit. The plants for this bed had been taken promiscuously from a bed three or four years old, which when planted consisted of Crescent, with Sharpless every few rows for a fertilizer. It was supposed that the Crescent had increased so much faster than the Sharpless, that none of the latter had been transplanted into the new bed. The Crescent having no fertilizer had become unproductive.

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DECEMBER MEETING.

Leon Hay, in response to a request to give the Society a report of the horticultural display at the Paris Exposition, said that the fruit and flower display was renewed every two weeks during the Exposition; that he saw nothing in that, however, that was superior to the production, of our own country. One bunch of grapes was shown that weighed six or seven pounds. The artificial fruit was so perfect that an ordinary observer could not distinguish it from the genuine. The forestry display was very elaborate, especially that made by Norway and Sweden. Only the Republics of the world exhibited at this great show. He spoke of the roads of France made of flint rock. They are hard and smooth at all times of the year, and are lined with trees ten or fifteen feet apart.

Paul Bonvallet, of St. Anne, gave a short talk on grapes. Of some forty varieties that he has grown he recommended the Concord for general planting and profit. Martha and Delaware have been fairly successful with him. The grape crop of the past season was light but of fair quality. He has lately experimented by grafting a number of foreign varieties on strong stocks, and this season grew some fine specimens equal to California fruit. He prunes his vines in the fall when laying them down and covers them.

A. Mellen stated that some fifteen years ago he planted Miner and Wild Goose plums. For about eight years the Wild Goose bore but little and the Miner were a failure. He then planted among them wild plums and since then the yield has been satisfactory. He has marketed as much as a bushel per tree some sea-

sons, besides what were consumed at home. He thinks the Miner almost entirely fails to fertilize its own blossoms and the Wild Goose does but little better when planted alone.

George Gray, of Iroquois county, did not consider the horticultural outlook very bright in his county. They have been rather unsuccessful with both tree and small fruits. Grapes, when taken care of, have done better than most other fruits.

PROCEEDINGS

OF THE

MARSHALL COUNTY HORTICULTURAL SOCIETY.

ORGANIZED APRIL 28, 1888.

113 MEMBERSHIP UP TO DEC. 31, 1889.

OFFICERS FOR 1889.

President—E. R. McKINNEY.
Vice-President—A. H. GASTON.
Secretary—C. S. ROWLEY.
Assistant Secretary—G. A. BANGS.
Treasurer—MRS. H. SORENSON.
Assistant Treasurer—MRS. L. DUCHESNE.

SECRETARY'S REPORT.

BY C. S. ROWLEY.

The Marshall County Horticultural Society has had a steady and healthy growth since its organization (April 28, 1888) and now numbers 113 members—not enumerating the honorary members. We hold two regular meetings each month, usually at the homes of the members. The dates of the meetings are the first and third Thursday evenings. In addition to these regular meetings, the Society holds two semi-annual fruit and flower exhibits—one usually in June, at which strawberries and roses are exhibited, and another in October, at which all fall fruits, flowers and vegetables are shown. Premiums are awarded consisting of ribbons, no cash premiums having yet been awarded. These exhibits are all well attended, and very fine displays of horticultural products are

made. The Society also holds an annual business meeting, consisting of papers, recitations, president's annual address, reports, and election of officers. This meeting is usually held in February. We were represented at the Central Society's meeting in Normal, several members preparing papers for that occasion. We also sent three delegates to the State meeting at Hamilton.

The Society made an exhibit of fruits at the State Fair at Peoria, as a county society, took the highest premium—and five others. We believe we are the first county society to become incorporated, as we shall have reached that before this is in type. We also think we are the foremost county society in Illinois—so far as membership and vim are concerned. We have passed strong resolutions condemnatory of the unscrupulous class of tree agents, but have no war to make on the honest men or women engaged in soliciting for the sale of nursery stock, a calling which is honorable and right.

We also claim to be the only horticultural society—state or county—that has its own official organ. All our proceedings, notices, etc., are now made public through the medium of the *Fruit Grower and Horticulturist* published monthly at Lacon, Ill. By this means we can communicate with the world, if need be, without cost, as this magazine publishes our work free of charge. The Central Society meets with us next May or June, at its annual meeting.

We are earnestly striving to further the interests of horticulture in general, over the County of Marshall, and the people of our county take a great interest in our welfare. Our membership is composed of the best elements of the people of the county. We are a healthy, prosperous Society, both financially and horticulturally; we pay all our bills promptly, and have good credit. We intend to exist as long as possible, and do all the good we can. We hold no secret meetings, and at almost every one of our regulars there are one or more papers read on horticulture, floriculture, gardening or forestry. None of our officers receive any salary, except that the Secretary is paid fifty cents for each meeting he officially attends.

In conclusion: We promised last season to make a better showing of our work for 1889, and we leave the reader to judge whether or not the Marshall County Society has kept its word. We think we have.

P. S. By request of the Secretary, I sent manuscript enough for a good showing in the Transactions, but am informed since, that the Executive Board has refused to allow anything more than a few pages from local societies a place there. I make this announcement for the information of our people, and to show why so large a society as ours is cut down to so scanty a representation in a volume paid for by all the people of the State of Illinois.

PROCEEDINGS

OF THE

Pike County Horticultural Society.

FOR THE YEAR 1889.

REPORTED BY

ROBERT ANDERSON, Secretary.

The Pike County Horticultural Society has but little to report at this time. Our fruit crop for the year 1889 was very small. It came nearer being an entire failure than anything we have had for several years. It is true, there were two or three exceptions—Mr. Cadwell, Mr. Walker and Winn Bros., had fair crops.

We were not as successful in combating insect ravages as we ought to have been, owing, we think, to commencing to spray too late. Some think the London Purple we used was not as good as it should have been. We are determined to begin earlier the next season. The above refers to the apple crop. The pear crop was, on the whole, good; small fruits, about a half a crop.

The Annual Meeting of the Society will be held in March, at Griggsville. We hope to have a good meeting, and an increased membership.

We have just closed a farmers' institute, held under the auspices of the Illinois Valley Fair Association and the Pike County Horticultural Society. The meeting was well attended for two days, and several excellent papers were read on agriculture and horticulture.

SMALL FRUIT FOR THE FARMER.

BY H. L. DOAN, JACKSONVILLE.

I have been invited by one of the members of your Society to talk a little about small fruits for the farmers. Of course in handling the subject I shall be brief, as the farmer needs but few varieties, and these of the hardiest kinds and easiest culture. For market, we would pursue different methods of cultivation, and also plant a larger number of varieties, such as the markets require, and bring the best results for profit.

The strawberry yields fairly well in most localities, the yield being proportionate to the carefulness of culture and fertility of the ground. It is best to plow the ground intended for strawberries in the fall, as late as possible before freezing weather sets in, which destroys many insects that might be injurious to plant life, and leaves the ground in better condition to work next spring, thus enabling you to set your plants earlier. The earliest set are generally the best, making better growth, and being better able to resist dry weather. In our locality, the Crescent, fertilized with the Capt. Jack, or some other strong pollenizer, gives the best results.

Plant these varieties in alternate rows, having at least three and a half feet between the rows, and plants in rows eighteen inches apart. Plant in ground freshly plowed and finely pulverized; also as smooth and level as possible. You cannot have your ground too well prepared, the success of planting will mainly depend on this point. Do not touch the ground unless in the right condition; after planting, go along the row and press with hand-roller, or tread with feet, the side of each plant. When the plants commence to grow, keep them well hoed, and cultivate the ground between rows. We cultivate after every rain, until the ground freezes. I do not mean to restrict you to two varieties, as tastes differ. If you want large berries, try some Bubach No. 5, Cumberland Triumph, Miner or Sharpless; there are plenty to pick from, and each year brings out new candidates for public favor.

I would recommend for black raspberries, the Tyler and Ohio, their season being in the order named; for the red varieties, the Turner and Brandywine, these being hardy and reliable varieties. We plant in rows eight feet apart, and thirty-six inches in row. Plant the black cap raspberries in furrows, covering with about five inches of earth, hoeing in the earth as the plants grow, so by the time your furrow is level with the ground, your plants are six inches deep, and are not as likely to heave out by the action of the frost. After the first season, the plants must be topped when two feet high, in order to throw out laterals which produce the crop for next year.

Of Blackberries, we plant only one variety, the Snyder, finding it iron-clad in our locality; and, if trimmed properly, carefully tended and judiciously thinned, will bear good-sized berries, and be a remunerative crop to the fruit grower. Plant early, plant deep, and thoroughly cultivate, until fruit commences to ripen.

I will not take up your time any longer, and in this brief talk I have only aimed to give you a short list of varieties which have proved good and reliable, after a trial of many years in many localities.

PROCEEDINGS

OF THE

Richland County Horticultural Society,

FOR THE YEARS 1889 AND 1890,

REPORTED BY

R. T. FRY, SECRETARY, Olney, Illinois.

LIST OF OFFICERS FOR 1890.

President—J. P. WILSON.
Vice-President—W. T. RITTER.
Secretary—R. M. FRY.
Treasurer—T. M. SHIELDS.

ON the 25th day of May, 1889, was organized at Olney the Richland County Horticultural Society. The following named gentlemen were elected officers: President, J. P. Wilson; Vice-president, J. L. Zook; Treasurer, R. A. Hunt; Secretary, R. T. Fry.

The second meeting was held July 6th for the purpose, mainly, of perfecting arrangements for an exhibit at the county fair to be held in September. A committee of one from each township was appointed to look after the display from his township.

Another meeting was held August 31st, at which committees made report and further arrangements made for the exhibit, which was pronounced the finest display of fruits ever exhibited in this county. This work gave the young society prominence and paved the way for the first annual meeting which was held at Olney Jan. 14 and 15, 1890.

TUESDAY MORNING, JAN. 14.

President J. P. Wilson called the meeting to order at 10:30 o'clock.

W. F. Ritter made report of his experience in growing raspberries. Mr. Ritter, said: I have tried nearly all the varieties, both old and new. I have paid out considerable money for new varieties and I am disgusted with the glowing reports made by nurserymen's catalogues of the new varieties, for I have found fully nine-tenths of all that is said of them to be untrue. I have found Souhegan, Chapman and Tyler to be practically the same berry with me. The earliest berry I have found to be Davidson's Thornless, but it is not a heavy bearer. All the berries are taken in two to four pickings. Mammoth Cluster I consider best quality of any berry I have ever grown, but not reliable for market.

T. W. Hutchinson—What varieties would you recommend for early and what for late?

Mr. Ritter—Souhegan for early and Gregg for late. The Gregg I consider the most reliable berry for us. It is, in fact, to the raspberry family what the Ben Davis is to the apple family.

J. F. Decker, giving his experience on pruning raspberry vines, said: I have tried both fall and spring pruning and have become fully convinced that spring is the proper time to prune. I have noticed that vines stand winter better when not pruned in fall. I prefer two or three canes to the hill. M. J. Harris favors but one cane to the hill but says he does not always practice it. Mr. Ritter thinks one cane enough and says the berries will be larger.

——o——

AFTERNOON SESSION.

The President called the house to order at the appointed time and M. J. Harris, of Calhoun, made the following report on strawberries:

My first experience cultivating strawberries was with the old, well-known and once popular Wilson. It was once a noble variety, giving good growth of plant and an abundant supply of fruit. It is now enfeebled with age and in this locality is unprofitable. It is a very good fertilizer for pistilate varieties, but it is

of late years so poor a grower that I have discarded it. Sharpless makes a satisfactory growth of plant, is free from rust, resists drouth and the alternate freezing and thawing of winter better than most varieties, but with me its yield of fruit is light. It will give a few kingly berries and a good many small ones. I have grown it on land of ordinary fertility and on land very rich, in matted rows and in hills. It is a poor cropper; however it is a good fertilizer for many pistilate varieties. Glendale, like Sharpless, gives a few large berries, (but of poor flavor), and a good many small ones. Its foliage rusts some. Its season is late. I regard it as being unprofitable in this locality, but I think it a good fertilizer for Windsor Chief and other late blooming pistilate varieties. Windsor Chief on well fertilized heavy soil makes a satisfactory growth of plant and yields an abundant supply of fruit, but on thin land it is a poor grower and its yield of fruit is light. Its fruit is above the average in size but of poor flavor. Considering it unprofitable I have long since ceased to grow it. Haverland. This variety is a seedling of Crescent and is much like it in plants and habit of growth. Last year during the drouth, at and before fruiting time, on my trial bed containing twelve varieties, Haverland stood the drouth best of all. Like Crescent it is wonderfully productive. Its fruit averages larger and is more firm than Crescent. It continues a long time in bearing. It is a pistilate variety. Its season is early to medium. It sends out more fibrous roots and takes better hold upon the soil than any variety with which I am acquainted and of all varieties it is the least injured by the white grub.

J. L. Zook spoke very highly of Bubach No. 5. He said it did splendidly for him. Had planted on very rich soil and received a large crop of very large handsome berries.

The subject of apple orchards was then introduced by R. T. Fry as follows:

"The apple," says Downing, "is the world-renowned fruit of temperate climates." The origin of the cultivated apple is unknown, but was probably introduced into Britain by the Romans in A. D. 59, to whom twenty-two varieties were known. In 1688 only eighty-seven varieties were known. At this time there are not less than 5,000 varieties, with several hundred new varieties coming to the front each year. We have quite enough varieties, it would appear, and yet, perhaps, the universal and ideal apple for market is yet to be originated.

In a paper of this kind it is not expedient to try to cover any considerable part of the subject, and I will only touch lightly upon a few of the many interesting facts connected with apple growing in our famous apple region.

It is now quite generally understood at home and abroad that Southern Illinois is the most favored region for growing fine flavored, excellent keeping and shipping, handsome "red apples." This favored region has for its center a place situated less than fifty miles from where we are now assembled. Our people are now fully satisfied that our claims have not, and can not be overestimated, and they are determined to make this the garden spot of the west. We hope to see within five years our cheap land sell at from $75 to $100 per acre. Hope is made up of desire and expectation, so that we not only desire it, but expect it. Land has increased one-fourth in the past six months, and the demand is increasing every day.

To grow an orchard requires time, money and eternal vigilance. If you are not willing to wait eight or ten years for returns, and are not willing to invest money for trees, labor and fertilizers, and give the trees attention from the first of January to the last of December each year, you must let some one else grow the orchards.

After the orchard is grown our work is only begun. The trees must be kept free of the many insects which prey upon the fruit and foliage. The amount, in value, of fruit destroyed by the injurious insects in the United States each year is estimated at $200,000,000. It is estimated that the codling moth alone has, in recent years, destroyed one-half of the apple crop. But along with the marked increase of insects, there has been increased activity on the part of cultivators and the national and state governments are devising means and remedies for destroying these pests. The borer needs special attention, because of his deadly work, and the large number of young trees which have been set within the past year. This insect enters the tree and cuts into the solid wood near the surface of the earth. It is a dangerous enemy, for while there is very little external evidence of his work, it may have perforated the wood internally in all directions and reduced it to a mass of powder. If the body of the tree is carefully washed in May with soft soap, lime, sulphur and carbolic acid, from the ground about a foot high, the borer will do very little, if any, harm to our trees. Spraying for codling moth will be treated of later, so I will not speak of it here.

We are frequently asked if there is not danger of overdoing the apple business. We desire to say, most emphatically, that we do not believe that there is any danger of ever overstocking the market with select winter apples. But two sections, besides ours, are known as large fruit producing sections, viz: New York and Michigan. These sections in 1888 produced a large crop—New York produced one and one-half millions barrels, and Michigan one million; or only two and one-half millions in both; of which 1,300,000 barrels were exported, leaving only 1,200,000 barrels for home demand, or one-tenth of a

barrel to each family in the United States. To supply one barrel to each family in the United States requires 14,000,000 barrels, or at least five times as many as were produced last year.

It is a well known fact that the old orchards of New York are failing, and in a few years will be gone entirely, and the new ones are not as good bearers as the old ones, and the fruit inferior, so that we will not long have a serious competitor in supplying the apple trade with perfect "red apples." The export trade is increasing and it is evident even now that we have exported more apples of the crop of '89 than we ought to have done. The favorite apple in the foreign market is the "King of Tompkins County" and "Ben Davis," the former selling at $4.85 and the latter at $4.75, November, '89, in Liverpool. The foreigners will buy our apples at these enormous prices in preference to their own at half the price.

Mr. T. W. Hutchinson—My orchard contains Ben Davis, Jonathan, Willow Twig, Gilpin, Rome Beauty, Winesap, and about twenty varieties that were chosen because they did well in Ohio. The Ohio selections are all worthless here, except the Maiden's Blush and Winesap. We need a list of discarded varieties. Apples that do well fifty miles north of us are nearly all worthless here. The Ben Davis is by far our best variety for commercial purposes. The Maiden's Blush does well for early autumn, and there is a season after it is gone and before winter apples are mellow that is best supplied by Jonathans. These three are the only varieties that I would like to plant in large numbers in this locality, The Winesap does fairly well but it produces so many water sprouts that it is twice as much work to raise a tree as it is to raise one of the other three varieties, and my trees have not produced half as many apples as the Ben Davis, and don't sell as well. The Willow Twigs in my orchard have two defects only. The first is their habit of growing innumerable branches. I think that if the limbs were cut back a little they would grow about as tight as a cabbage head. The second and real defect is that when they are old enough to produce three or four bushels to the tree they begin to rot on the trees. I hear of fine orchards of this apple less than twenty miles to the west of us, while from the county joining us on the east, Lawrence, they report still more rot than here. The Rome Beauty is, perhaps, our finest apple, but it is a shy bearer in this locality. The tree stands the winter well, but any injury to the tree

in cultivation does not heal readily and sometimes kills it, and often becomes a permanent injury. The apples after the blossoms fall are little larger than a grain of wheat, and make little growth for two weeks. They seem to be waiting for a frost and even a chill often takes off nearly the whole stand and the rest of them keep falling the whole season. I hear of only one orchard of this variety that is considered profitable in this vicinity. We want at least one other kind of winter apple for this region. Our success will depend upon planting large orchards of the three or four varieties that do best here, and those who have planted whole fields of Ben Davis have had the best success of any hitherto.

My orchard brought me fifty dollars per acre net this year and would have brought three times as much if it had all been Ben Davis. Several hundreds of acres of apple orchards have been planted this year in Richland county, and the question is being asked whether we shall not over-do the business? I think not. The apple producing region is limited. The old orchards in the north and east are fast disappearing and they can never compete with us again.

Except in the strip of land that is protected by the temperature and fogs of the great lakes, and most of that will be used for fruits other than apples, we shall have a country two hundred miles wide to north of us and one still wider to the south that can be supplied with apples from the great apple belt in which we live more easily than from any other source.

Again, there are many competing lines of railroads between this region and the ports on the lakes, from which apples are already being shipped direct to Liverpool and other cities in Europe. The freight from Detroit to Liverpool for barrelled apples is low and it will always cost less to transport a barrel of apples than it will to carry a barrel of flour. If Southern Illinois had a million barrels of apples they could be laid down in Europe at fifty cents per barrel and perhaps a little less.

Again, the high color of our red apples is quite superior to apples grown in any other region of which I have any knowledge, and I have observed the color of apples from Maine to Michigan. Even the man who is surest that there is nothing in color goes to the store and buys the red apples himself. High color will always be an element of value.

Mr. Ritter—I am decidedly in favor of high top trees. I want them high enough to plow under with a team. I prune my trees to suit me, preferring those one year old. When the young tree has attained the proper heighth as a straight switch I pinch out the top bud and then it throws out limbs. I leave but three prongs or main limbs—one extending northwest, one southwest and one east. This mode of pruning gives me an open topped tree and the apples color up well. I have found the Ben Davis to be the most profitable apple with me.

The subject of fertilization of bloom in the apples was discussed for some time, and it was quite generally agreed that a mixture of varieties in the orchards would give better results than to plant a solid block of one variety. That those who plant an orchard of Ben Davis should plant every fifth or sixth row with some other variety which blooms at the same time or a little later than the Ben Davis.

Spraying—Mr. Slanker gave his experience as to the spraying of trees to destroy the apple worm. He said from his observation fully seventy-five per cent. of his apples were saved by spraying.

Mr. Hutchinson—My trees were badly affected with canker worm and have noticed that all were killed within twenty-four hours after one application of the poison. I am satisfied that I would have had no apples in 1888 had it not been for spraying, whereas I had a fair crop of fine apples while my neighbors, who did not spray, had none.

Varieties—It was unanimously agreed that the Ben Davis is the most reliable and profitable apple to grow. As to the next best, however, no agreement was reached. Some favoring the Jonathan and others Rome Beauty or Willow Twig. All of the above apples do well on most of our land.

The Minkler and Akin Seedling had many warm friends. These are both very fine apples, not only fine in appearance but of extra fine rich flavor. The Akin Seedling originated in Lawrence county and is being planted quite largely in that county and Richland, and promises to be a valuable apple. The tree is an upright, vigorous grower and comes into bearing from the sixth to eighth year.

REPORT ON BLACKBERRIES.

Mr. Ritter—I have had considerable experience with blackberries. Began with Snyder. It is a good bearer but does not stand drouth well, yet I have found it the most profitable berry with me.

Peach. T. M. Shields—I have found Heath cling and Heath free to be most hardy with me. The general opinion was that peach growing is profitable, provided the right varieties are planted and proper care is given them. Many small orchards of peach trees have been planted in the past two years, and the crop will be quite large in another year.

J. P. Wilson—The pear crop the last season was quite good. In fact, not only for the season just past but for several years, pears have done fully as well as the apple or any of our other fruits. The one great cause of discouragement in pear cultivation, the blight, having shown itself but very little as compared to former years. I have made it a point to watch the fruit as it came to market on all occasions when I could do so. The result of my observations has been that we have one drawback to successful pear culture that is worse than the blight. And that is a lack of knowledge on the part of many who grow them as to the proper care of trees, and I am constrained to think that many of them do not know what a good pear is, for we so often see pears in market that say as plainly as though they could speak, "See what a plight I am in, but it is not my fault." Such fruit is so very unsatisfactory to the consumer that they have become disgusted and quit buying pears of any kind. It is in pear growing as with anything we undertake. We cannot reasonably expect to succeed unless we learn something of the nature of the thing. Many of our intelligent people who are trying to grow pears (at least I suppose they are; they are buying trees and planting them) do not know the difference between a standard pear and a dwarf. Many think that dwarf is some kind of a small-growing kind that will bear quickly. They do not know that the root of one is pear and the other quince. Now let us look at the roots of the pear; what do we see as to character? we find a few large long roots reaching far down into the earth, so we see that if the tree is to be healthy and live to an old age

that the ground must be well drained, not only on the surface but underneath as well.

The meeting from first to last was a grand success. It was evident from the discussions that our Society is destined to be an important factor in the development of the fruit industry, already large. The closest estimate places the value of the apple crop of Richland county for the year 1889 at $150,000, and the value of other fruits at $50,000, thus making the value of our fruit crops $200,000. When we consider that perhaps four-fifths of our orchards are not yet bearing, it makes a grand showing.

. The display of fruit at this meeting was very fine. The samples of Akin's Seedling, Minkler, Ben Davis and Rome Beauty attracted much attention, particularly the first two named. A number of unnamed varieties were also exhibited, which showed good keeping qualities.

PROCEEDINGS

OF THE

WARSAW HORTICULTURAL SOCIETY.

FOR THE YEAR 1889.

REPORTED BY JAMES T. JOHNSON, SECRETARY.

STATED MEETINGS THIRD WEDNESDAY IN EACH MONTH.

DAY by day new evidences present themselves, showing the high standing to which the ever popular old "Warsaw" Horticultural Society has attained, and the dignity and consideration accorded to its deliberations, by the gardeners and fruit growers of every section of our country. And the wonderful reputation which it has thus attained is an ample reward to all of its members.

From a vast amount of interesting proceedings of the year, we are *permitted to condense only* the following:

JANUARY MEETING.

SOCIETY HALL, Warsaw, Ill.

C. C. Hoppe, Treasurer, reported a creditable surplus on hand, to which members present added liberally.

A. C. Hammond, from Committee on "Orchards," reported weather unusually mild and favorable.

H. D. Brown, from Committee on "Berries," reported some plants not well rooted, probably a result of drought and insect injuries.

James T. Johnson read the following paper:

RETROSPECTIVE AND PROSPECTIVE.

If our fruit crops were always good, and prices so remunerative that the producer could soon retire from the business, probably he would never tell the world what brought him success. But when it brings him *failures*, as, alas, is too often the case, it sets him gossiping with his neighbors. "Misery loves company;" he must unburden the mind, and learn what has been the experience of others. So much for adversity, "a blessing in disguise," one that causes us to ascertain our faults and short-comings, and to remedy them. Thus are horticultural societies organized and promoted.

Failures are due to many causes; as, drought, wet, cold, heat, insects, fungi, &c., but probably the three worst enemies the horticulturist—no, the fruit grower and gardener—has, is *ignorance*, *laziness* and *neglect*; and until these are remedied, failures will continue.

When too hot and too dry *at the same time*, as in 1887, berry crops and the like suffer the consequence, and must, unless intelligence and industry can prevent. And the consequences of a season like 1887 extend to the next year. Another trouble is, our markets are almost inexplicable. Sometimes our crops are poor and our prices poor at the same time. (This was the case with our berry crop of 1888.) Why is this? Is it over-crops elsewhere, or is it manipulators and *trusts?* The short crop with us was probably a want of vitality in our berry canes, and *vitality* seems wanting in our markets; but, what *is* the cause?

Of grapes, we have this to say, and nothing more: The crops of 1888 and '89 promised well, but alack a day! the *rot came*, and the *grapes went*—verily! the way of the fruit grower seems hard hereabouts. It may be all wisely designed to test the capacity of the fruit culturist to hold on, and labor, learn and wait.

But again; the apple crop (of this vicinity) in 1888 was satisfactory—that is in yield and quality—but what of the prices? *the profits*, they were a *total failure*, they were no compensation to our producers. The crops were immense, quality fine, but no demand, no pay in sixty cents per barrel, surely the tenacity of the horticulturist has been sorely tried. And yet we, the true horticulturist, will not be found wanting. With increased millions of people to furnish with satisfying and health promoting fruits, we must be content to go to work, to make new and frequent plantations, and learn, labor and wait, and success, in reasonable measure, is assured us.

FEBRUARY MEETING.

The February meeting was held at the City Hall, Hamilton.

The subject of "Vegetable Gardening" was taken up as a timely topic, and was very fully discussed by C. C. Hoppe. The speaker said many encouraging things, and said them in his usual clear and forcible style, demonstrating the value and utility of the vegetable garden, and adding many useful hints for the season.

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MARCH MEETING.

The March meeting was held at Horticultural Hall, Warsaw. "The outlook for tree planting" was ably discussed, and a valuable paper read by C. N. Dennis. All agreed that the outlook —in spite of discouragements—was really favorable for tree planting.

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JUNE MEETING.

The June Meeting was held at City Hall Hamilton, jointly with Montebello Floral Society, and the Business Men's Association of Hamilton.

The hall was made beautiful beyond description by the ladies of Hamilton and vicinity. One lady alone (Mrs. L. Lyon) exhibiting forty-four named varieties of geraniums. There were geraniums of every hue, and color, variegated, double, single or fragrant.

Mayor Bridges gave an address of most hospitable welcome.

President H. D. Brown responded, tendering the gratitude and appreciation of the Warsaw Horticultural Society.

On the condition of orchards, A. C. Hammond led a discussion, eliciting the fact that a short crop of apples was in prospect for 1889.

On the subject of floriculture and on small fruit culture, papers were read creditable in the highest degree both to the locality and to the individuals who gave them, and duly appreciated by the large attendance at this excellent meeting.

AUGUST MEETING.

The August Meeting was held at the apiary of (that prince of bee keepers) Mr. C. P. Dadant, and was made the occasion of one of the grandest picnics of the year. Messrs. Dadant & Son hospitably entertained the Society, and ably and eloquently explained bee keeping in its effects upon horticulture.

Mr. Jonathan Periam, of Chicago, gave a lengthy talk upon the effect of combines and trusts upon horticulture, after which the Messrs. Dadant further entertained the audience by running their factory, showing the process of manufacturing foundation, and of extracting honey.

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